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THE HISTORY OF MENTAL TESTING[1]

By Kimball Young

I

The famous dictum of Stubbs that, "the roots of the present lie deep in the past" might not only stand over the doorway of all history departments but of science laboratories as well. Mental testing is so recent that many are disinclined to give much attention to its history, although its relations to and effects upon present-day psychology are peculiarly intimate. It might be said that so far as American psychology is concerned this movement has swept everything else before it.[2]

The Americans have a curious *penchant* for assuming originality. Our political and social history seems to have affected our scientific and philosophical views in so far that we like to imagine ourselves rather freed from the historical backgrounds and to be inventive and novel throughout. Making history on every hand as we are, we have a notion that we somehow have escaped history. This is well illustrated

[1]The writer is greatly indebted to Miss Bessie Park for her assistance in collecting bibliographical and biographical materials in connection with this paper.

This article was practically completed before the account of the history of testing in Pintner's "Intelligence Testing" was available. The material here overlaps Pintner's in but few places and the general approach is entirely different.

[2]Recent statistics of the interests and researches of psychologists in this country has shown a remarkable shift toward applied psychology which means, in large degree, some phase of the use of tests. Cf.: Terman, L. M.: "The Status of Applied Psychology in the United States," *J. App. Psych.*, 1921: v. 5: 1-4.

in the present writings of the behaviorists[3] and while American psychologists have played an important role in the development of mental testing, the cultural borrowing in this instance is so obvious that we may not escape its significance. It is with a view to furnishing a running comment on the historical roots of this movement that the present paper is presented. Secondly it is hoped to point out certain aspects of the movement in reference to experimental and systematic psychology.

To understand fully the meaning of these present trends it is necessary to note the conflicting standpoints which have dominated psychology in the past. Differences in viewpoint arise first of all from differences in methodological approach and secondly from the analysis and interpretation put upon the materials. If there is any contrast between the tendency toward mental measurement in terms of tests and the old-line experimental and systematic psychology it grows out of divergence in aim and method. Emerging from physiology and physics the experimental work of Wundt has colored all subsequent psychology, especially in Germany and in this country. To the *echt* Wundtian, psychology is a natural science concerned with atoms of certain dimensions called sensations and images. The method of physical measurement was borrowed from physics, physiology and an atomistic philosophy. Introspection, in the form of verbal report, was added to elaborate the quantitative method. Moreover, to these men, "science goes on its way without regard to human interests and without aiming at any practical goal."[4]

On the other hand, if psychology is looked at in a dynamic, functional and practical way, from a standpoint biological and social, it may take on an entirely different aspect. It may still be interested in laws, generalization and predictability, but of another order, and yet lay claims to being a science. It is a curious fact that the mental testing movement arose largely from those men who were interested in the broader human and social features of psychology. A partial key to an understanding of the divergent standpoints

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[3]Cf.: Watson, J. B.: "Psychology," etc., 1919, p. vii, and Titchener, E. B.: "Psychology as the Behaviorist Views It," *Proc. Amer. Phil. Soc.:* v. 53, no. 213, p. 5.

[4]Titchener, *op. cit.*, p. 14. Titchener elsewhere writes that the interest in using mental tests is purely practical and furnishes data for applied psychology or a technology only and "contributes only indirectly to the general science of psychology." Cf.: article "Mental Tests" in *New Intern. Encyclopedia,* 1917: v. 15, pp. 414-5.

of the applied psychologists and the experimentalists lies right here. Upon the issue of this conflict of aim and method the future of psychology rests.

There have been four methods of attacking the psychological data. All of these, following the lead of the older sciences, attempted to be quantitative. All have been concerned with measurement, but measurement of different sorts. The first and probably oldest method in modern psychology was the psycho-physical. Weber (1795-1878) experimenting with sensory data, chiefly pressures, discovered that the report of the individuals on differences in sensations did not agree with the differences in the stimulus-scale of intensity. The results of this work were published from 1829 to 1834. We owe to Fechner (1801-1887), however, the debt of having determined more accurately and precisely the mathematical features of Weber's work. Fechner made use of the method of error which had been completed by Gauss and from his date on the quantitative method had come to stay in psychology.

The second method of measurement in psychology is the study of difference limens. This is an outgrowth of the former, but unlike the notion of sense-distance which the former implies, this method is really a measurement in terms of a physical unit. The "interval of uncertainty" between your curves of upper and lower limens is taken as the point of departure for measurement. The prominent names here are G. E. Müller and Urban.

The third method is that known as "mental measurement" which is practically synonymous with mental testing as here used. This method is an outgrowth of the work on reaction times, the roots of which are found in Weber, Fechner, Helmholtz and others, but which found its first application to the higher thought processes in Francis Galton who borrowed the method of Quetelet (1796-1874) for dealing with mass data of association times in terms of averages and measures of dispersions. Here large samples of individual measurements, i. e., rough reaction times, are taken in any given function and the empirical data put under the curve of the normal law of error.[5]

[5]Cf.: Boring, E. G.: "The Logic of the Normal Law of Error," *A. J. Psych.*, 1920: v. 31: 1-33 for a readable criticism of the entire position of those who follow this third method. This paper should be read by all those who hope to catch the significance of present difficulties in the statistical treatment of the qualitative data of mental tests. Cf. also: Kelley, T. L.: "Principles and Technique of Mental Measurement," *A. J. Psych.*, 1923: v. 34: pp. 408ff. and Boring's forth-coming rejoinder to Kelley, *A. J. Psych.*, 1924: v. 35.

The fourth method in psychology is the physiological. Here the unit is expressed in terms of the stimulus, for instance, as among rigid behaviorists.

All these methods have had their place in the past. The noteworthy thing is the present vogue of the third method. There is no doubt that associationism has played a considerable part in the whole matter and that it was the attempt of Galton, then of Wundt, but particularly of Cattell, to apply the method of reaction time to associative processes and the subsequent dealing with results under the formulae of Gauss and Quetelet that has brought this movement to its present importance.[6]

Taking our retrospective orientation from the present situation in this country, we note that mental testing had its origin in the convergence of four streams of scientific development: German, French, English and American. The outstanding names in this movement are, however, from the last three, Binet, Galton and Cattell. The accompanying sketch indicates in crude outline the relations of these contributions to each other. The dates inserted are for those of important publications. The brackets bring out influences, direct and indirect.

We shall take up a sketch of the history of psychology in each of these countries as it touches the problem before us, giving briefly the names, dates and work of those men who stand out most significantly. There is no intention of making the paper a review of the literature on testing or a mere catalogue of individual contributions. Rather we desire to trace in broad lines the background of the present-day tendencies.[7]

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[6]Cf.: Dessoir, M.: "History of Psychology," pp. 250-1 for note on the place which Bessel, the astronomer, had in developing reaction-time notion. He saw as early as 1822 that there was considerable personal error in such observations as scientists make with instruments and that "no one can guarantee 'to estimate absolute time-intervals with certainty.' " Cf. also: James, W., "Principles of Psychology," v. 1: p. 413f.

[7]The most available bibliographies on the mental testing movement are: Whipple, G. M., "Manual of Mental and Physical Tests," 1910, 1915. Kohs, S. C., "Annotated Bibliography of the Binet-Simon Scale," *J. Educ. Psych.*, 1914: v. 5: 215-224; 279-90; 335-46. This bibliography is practically exhaustive on Binet-Simon tests up to the early months of 1914. Boardman, H., "Psychological Tests, a bibliography," *Bur. of Educ. Exper.* publications, No. 6, New York, 1917. Mitchell & Ruger, "Psychological Tests, revised and classified bibliography," *Bur. of Educ. Exper.* publications, No. 9, New York, 1918. Wylie, A. T., "A Brief History of Mental Tests," *Teach. Coll. Record:* 1920: v. 33: 19-33 contains a good summary of contributions on individual tests. Cf: Ballard, P. B.: "Mental Tests." London, 1920, ch. 2.

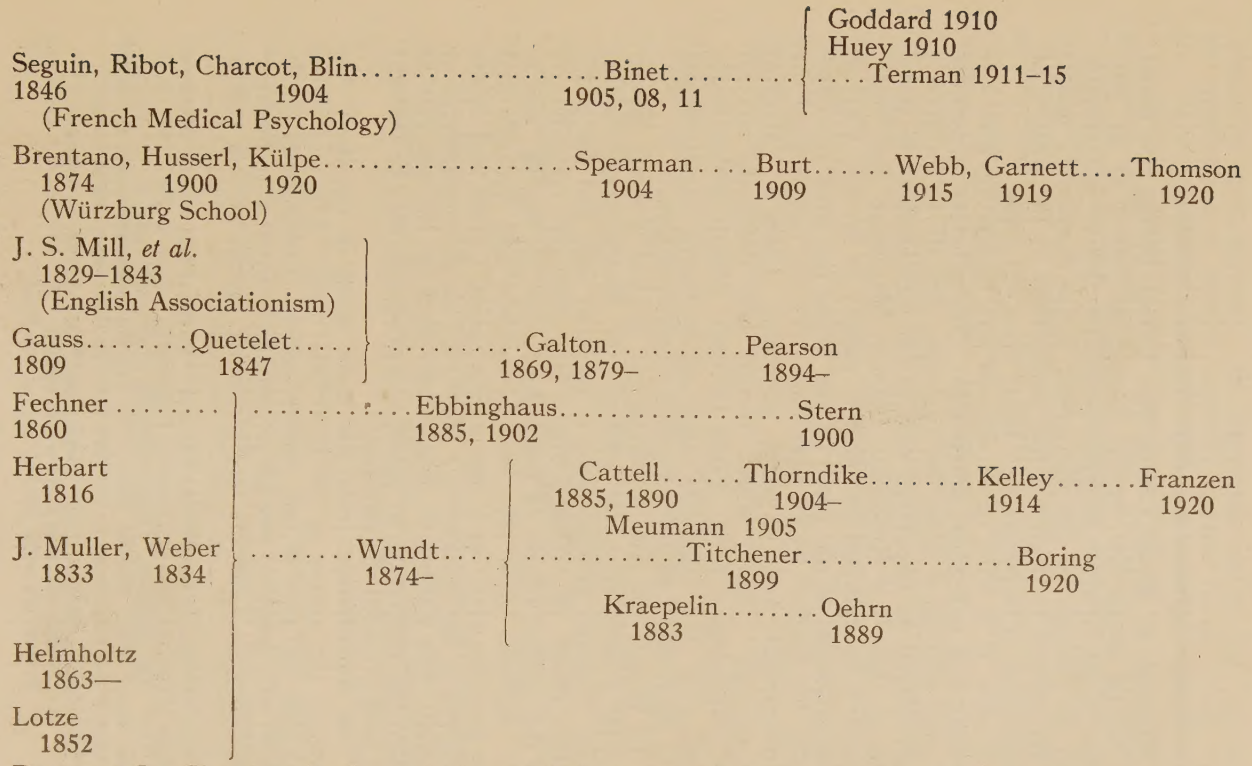

DIAGRAM I: Showing the General Lines of Influence in the History of Mental Measurement.

(N. B. A number of smaller, minor inter-relations are not shown. A line should be drawn, however, to indicate Meumann's influence on Terman, but it is omitted in order not to encumber the sketch with undue cross-lines. Dates indicate roughly the time of most important contributions, but all dates are not complete. In some instances no single date is representative.)

II

The German Influence and Experimental Psychology

Although to Binet, Galton and Cattell belong the honor of having begun the mental testing movement as we now know it, the influence of experimental psychology in Germany and its relation to the movement under discussion, makes it imperative to devote a few paragraphs to the history of psychology in Germany as it bears upon our topic.

Wundt, it is true, never showed any sympathy with the problems of individual differences. Nevertheless, a number of men who came under his tutorage, directly or indirectly, have played an important part in the development of tests. Among these are Kraepelin, Oehren, Meumann and Stern. Wundt's background included a variety of trends, English associationism as put forth by the Mills, the work of Helmholtz, his teacher, which gave him a definite bias toward the experimental and physical approach, Lotze's "Medical Psychology" (1852) which turned him definitely toward the physiological field. From Herbart, Wundt undoubtedly took over the emphasis upon quantitative measurement and the roots of his own doctrine of apperception.

To Wundt the true psychological method was the experimental attack upon the elements of consciousness—sensations—through measurement of reaction time and the qualitative check of introspection. His principal contribution to the applied phases of psychology, such as testing, was in his emphasis upon experimental method and attitude and the training which such men as Kraepelin, Cattell and others received in his laboratory. However, his discouragement of Cattell, who wanted to publish and work on the question of individual differences in associative processes, may be thought to have retarded the movement.[8]

The contribution from the early work in Germany has been in the nature of the individual tests. Many of these are now the core of our various scales. Ebbinghaus (1850-1909) who seems to owe his psychological interest to Fechner[9] published in 1885 his epoch-making results of his experi-

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[8]Cf.: footnote by Cattell and Farrand: "Physical and Mental Measurements of the Students of Columbia University," *Psychol. Rev.*, 1896: v. 3: p. 618. Trautscholdt, "Experimentelle Untersuchungen ü. d. Association, etc.," *Phil. Studien*, 1885: v. 1: 213-250 represents one of the early studies which conformed to Wundt's ideas on the proper method, etc.

[9]Ebbinghaus dedicated his "Grundzüge" to Fechner as follows:

"Woher mir alles kam, wohin es zielt
Erkenn'ich wohl, ich hab' es nur von Euch"

mentation upon memory. As Ruger has put it this "marks the application of precise scientific method to the study of the 'higher mental processes'." From this point on we have a number of individual tests, largely of memory or associative processes, being developed. In 1897 Ebbinghaus published a paper[10] on a new method of testing the intelligence of school children. This method consisted of a number of individual tasks in memory, computation and the first form of his completion test. This latter was destined to become one of the most widely-used and most widely-known of the mental tests. The author himself called it a "test of intelligence" saying that it is a "simple, easily applied device for testing those intellectual activities that are fundamentally important and significant both in school and in life."[11] It has been used by Wiersma for investigating sex differences, native talent, etc., by Terman in his study of stupidity and genius; Krueger and Spearman made use of it in their correlational treatment of mental tests, while Lipmann and Wertheimer "expanded it into a diagnosis-of-fact test."[12]

It is evident that this test originated for the practical purpose of testing fatigue and intellectual alertness, yet psychologically it is very difficult to classify, since so much depends upon the exact nature and extent of the deletions in the text. It may be complicated into a "linguistic puzzle" which makes it akin to a test of a certain imaginative-creative sort, on the other hand, it may degenerate into a mere test of controlled association, or if the text be first read to the examinee it becomes then a "test of associative recall, i. e., a form of memory test."

Thus from a strictly systematic point of view this completion test typifies much that is common to all intelligence tests. It is purely empirical and can only be tested in a statistical way. Yet its diagnostic value, if it possesses any whatsoever, depends upon the qualitative nature of its make-up and the response of the examinee to the same.

Emil Kraepelin (1856—), a pupil of Wundt's who turned to medicine for his life's work, inaugurated a series of valuable studies on the differences between the minds of the normal and the insane. In France, as we shall see, the relation between medicine and psychology has always been very close.

[10]Über eine neue Methode z. Prüfung geistiger Fähigkeiten u. ihre Anwendun bei Schulkindern. *Zt. f. Psychol.*, 1897: v. 13: 401-459.

[11]Quo. by Whipple, *op. cit.* (1910 ed.) p. 446.

[12]*Ibid.*, p. 446. Whipple discusses its many forms. Trabue, M. L.: "The Language Completion Test," *Teach. Coll. Cont. No. 77: 1916* is based on this.

It is important to notice that in Germany through the work of Kraepelin and his pupils medicine drew upon the technique of the experimental laboratory of Wundt and thus psychology came into closer *rapport* with the medical profession in Germany than it had ever been before. This interest of Kraepelin's in the likenesses and differences between the normal and the insane led him to consider the whole question of individual differences. In attacking this problem he devised a number of tests which have since become standardized and well-known in the field of mental and physical measurement. Among these we may name: endurance of grip, discrimination of brightness, discrimination of dual cutaneous impressions, computation and rote memory. Whipple remarks that "we owe most of our information with regard to the part played by practice, fatigue, recuperation, adaptation, momentum or 'warming-up' and the various kinds of spurts" to the work initiated by Kraepelin.[13]

In 1883 Kraepelin published a paper "Experimentelle Studien über Associationen" which was one of the first papers on the subject of association tests and mental diagnosis. This paper showed the efforts which were being made at the time to classify the various types of insanity "by the types of association which they yield and the length of the association time."[14]

A. Oehrn, who was first a pupil of Wundt's and later of Kraepelin's, expanded the work of the latter in his dissertation taken in 1889.[15] Both Oehrn and his teacher were interested in studying "the fine deviations from the great fundamental features of psychical conformity to law."[16] Neither of these men was interested primarily in the statistical treatment of their data. They followed Wundt in believing that the fundamental problem for psychology is the discovery of general laws for man as a generic combination of measurable entities called sensations, images and feelings, in analogy to the study of the atomic elements in chemistry. The individual variations still revolve around the psychologic man

[13] *Ibid.*, p. 334.

[14] Kraepelin's paper is found in *Versamml. Deut. Naturf. u. Aerzte*, Freiburg, 1883. While Galton had published a paper in 1879, which dealt with reaction-times and associative processes, Kraepelin was the first to make a wide practical application of such procedure. Cf.: Warren, H. C., "A History of the Association Psychology," 1921: p. 229 for quotation.

[15] Published first at Dorpat in 1889, but reprinted with but few changes as "Experimentelle Studien z. Individualpsychologie," *Psych. Arbeiten*, 1896: v. 1: 92-151.

[16] Cf.: Spearman, C., "General Intelligence, Objectively Determined and Measured," *A. J. Psych.*, 1904: v. 15: p. 207.

of the Wundtian school. It remained for the English workers led by Galton, Pearson and Spearman to evolve another type of psychologic man who is discovered in measures of averages and correlations. The former approach had the virtue at least of not losing complete sight of the individual.

In his 1896 paper Oehrn mentions using a cancellation test, but it seems that Bourdon (*q. v.*) was the originator of this addition to the then rapidly growing stock of single tests available for measurement of individuals in reference to ability, sex, age and fatigue, etc.

There are a number of other German psychologists who played a part in the preliminary stages of the testing movement previous to the great synthesis and impetus of Binet.[17] Among these, Münsterberg's paper bearing on individual psychology in 1891 may be thought indicative of the rising interest in that field by some of the stricter experimentalists. In 1889, C. Rieger published a paper upon disturbances to intelligence following brain lesions which proposed a universal method of testing intelligence.[18] In 1897 Th. Ziehen summarized the results of the newer methods of dealing with the defectives and presented a scheme for testing.[19] And in 1905 E. Meumann (1862-1915) gave a more extensive review of the literature than had hitherto been attempted.[20] Meumann had his training in philosophy but later came under the influence of both Ebbinghaus and Wundt. His studies

[17]Cf.: Münsterberg, "Zur Individual Psychologie," *Centralblatt f. Nerv. u. Psychiatrie*, 1891: v. 14. Aschaffenberg, "Experimentelle Studien über Associationen," *Psych. Arb.*, 1896: v. 1: 209-299. Kraepelin's paper in the same year of his periodical, *ibid.*: 1896: v. 1: 1-91, sets out the general application of experimental psychology to psychiatry. Cron, "Ueber der Messung der Auffassungsfähigkeit," *ibid.*: 1896: v. 2: 203-325. Arnold, "The Psychology of Association," *Col. Univ. Contr. to Phil. & Psych.*, 1906: v. 13, no. 4 contains discussion and bibliography of association measurements.

[18]"Beschreibung d. Intelligenzstörungen infolge einer Hirnverletzung nebst e. Entwurf z. e. allg. anwendbaren Methode d. Intelligenzprüfung," *Verhdlg. d. physik.-med. Ges. zu Würzburg*, N. F. 1889: v. 23, no. 4. This was one year before Cattell's well-known paper on "Mental Tests and Measurements" in 1890. Cf.: *infra* section V.

[19]"Neue Arbeiten z. allg. Pathol. d. Intelligenzdefekts," *Ergebnisse d. allg. Pathol.*, 1897: v. 4. Cf.: "Die Ideenassociation des Kindes," *I u. II Abh. Samml. von Abh. a., d., Geb. d. Pad. Psych. u. Phys.*, 1898: v. 1: 1900: v. 3.

[20]"Intelligenzprüfung an Kinder der Volkschule," *Exp. Pädog.*, 1905: v. 35. His "Vorlesungen," v. 2 (1913 ed.) pp. 94ff. gives the most comprehensive review of the entire problem of individual differences in relation to mental endowment that we have. This is a source book of essential material to all who would know the background of the present problems.

on learning led him into the problem of individual differences and thence into the matter of mental endowment. His principal contribution, however, has been in critical attitude and in bringing to the attention of the pedagogical public the importance of the testing movement.

Stern is probably the best known German psychologist working in the field of tests. His early interest in the nineties in individual differences and in the psychology of testimony, following Binet's studies in suggestion, led to the publication in 1900 of his important book on differential psychology.[21] Stern's contact with Binet's early work, plus his own research with children, made him prepared for the announcement of Binet's scale in 1905 and 1908-11. Stern is best known in this country through Whipple's translation of his series of lectures before the German congress of psychologists in 1912, under the title "The Psychological Method of Testing Intelligence" (1914). In this treatment Stern introduces the notion of a ratio between chronological and mental age which might be known as a mental quotient. This it was which apparently gave Terman the idea of the intelligence quotient.

In addition to the usual channels of communication of matters psychological between France and Germany which brought Binet's work into Germany very early, in 1905 Binet and Simon published, in German, a short account of their initial work.[22]

Bobertag who saw quickly the value of Binet's work published in 1909 a rather complete summary of Binet's contribution up to that date.[23]

On the whole, the German contribution, therefore, has been first the general experimental method in psychology. Although Wundt was unsympathetic toward the investigation of individual differences, nevertheless a number of his students, notably Cattell and Kraepelin, turned their attention to the study of the higher processes in references to individual deviations. Secondly, Germany contributed a large number of individual tests which have been since incorporated into the batteries and scales in this country. And since the signal

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[21] "Die differentielle Psychologie," 1900, revised ed. 1911, again in 1920. This contains excellent bibliographies and rich discussional material.

[22] "Mitteilung über d. neuen Methoden der Diagnose des Kretinismus, Schwachsinns u. Mangelhafter Entwicklung," *Eos*, 1905: v. 1: 247-51. Binet's, "Les idees modernes sur les enfants," 1909 which gave the 1908 scale was translated in 1912 into German by Anschütz and Ruttman thus giving the German scientific public direct access to the method.

[23] "A. Binet's Arbeiten über d. intellektuelle Entwicklung des Schulkindes (1894-1909)," *Zt. f. angew. Psych.*, 1909: v. 3: 230-259.

work of Binet in France, Germany has made a great many contributions to mental testing directly, both in elaboration of method, devising of new tests and in application to new fields. For this newer development one must refer to the current periodicals.[24] The most important of these is perhaps Lobsien's development of the group-testing method.[25]

The older systematic German psychologists remained throughout rather skeptical of the development of testing. Külpe in 1912 criticized the work of Binet, saying that the latter exaggerated the value of the scale and the notion of "mental age." Moreover the test is not a true psychological experiment since it lacks introspection.[26] The bulk of the more rigid experimentalists would agree with Külpe's analysis, both in Germany and in this country.

III

The French Contribution and Medical Psychology

While we probably owe to Galton and Cattell the greatest direct debt for their initiation of mental testing, the contribution of Alfred Binet (1856-1911) stands supreme for its general originality and the fact that he synthesized the growing movement into his now well-known scale. However, one may not ignore the important influences on Binet, both from his immediate contemporaries and from his predecessors of the previous generation.

Medicine and psychology have ever been closer together in France than either in Germany or in England, certainly than exists even today in America. The reason for this is the fact that in recent decades French psychology may be sub-sumed under the term, "Medical Psychology." French associationism never possessed the vigor of the English school in spite of the important work of individual men like Condillac, Malebranche, Helvetius and Taine. Certainly in what might be called the modern period, beginning with Ribot, the emphasis has been toward the biological and thence easily to the medical emphasis, where the names of Bernheim, Charcot and Janet stand out prominently. The interest of these men in the total personality necessarily set a pattern

[24]Such as "*Zeitschrift für angewandte Psychologie*," ed. by Stern; "*Praktische Psychologie*," ed. by Moede and Pierowski, and a number of others.

[25]"Intelligenzprüfungen auf Grund von Gruppenbeobachtungen," Langensalza, 1914, pp. 59. This seems to antedate Otis's attempts at group testing in this country.

[26]"Psychologie und Medizin," *Zt. f. Pathol-Psychol.*, 1912: v. 1: 187-267.

for the study of imagery-types, which soon seized French psychology, for studies in suggestibility as witnessed in the early work of Binet himself, for attempts at investigation of character traits as in the work of Toulouse or in the study of genius, following Galton, by Odin and Joly.

Thus in the work of the psychiatrist on feeblemindedness and on the insane, and in the researches commenced on suggestion, imagery-types and character-traits the soil was prepared for the blooming of the flower of all this tendency in the work of Binet.

Before examining the immediate background of Binet's contribution mention should be made of the work of E. Seguin (1812-1880) whose influence both in Europe and in this country was very great and who in a sense may be thought the god-father of the entire movement to deal with the mentally defective in a sympathetic yet scientific fashion. His training occurred principally under Itard (1775-1838) and Esquirol (1772-1840), both of whom, with Voisin, Sollier and others of the period were deeply interested in mental deficiency and insanity and were trying to find some method of dealing with their problems more objectively. It was "at the suggestion of Itard that he (Seguin) decided to take up the study of idiocy and to devote himself to the training of idiots."[27] Seguin's success in the education of the "Savage of Aveyron," which attracted great attention at the time, led to the establishment of a school for idiots in 1839. His books were used everywhere as standards upon the subject of feeblemindedness and he was affectionately termed "The Apostle to the Idiot." Seguin, at the outbreak of the Revolution of 1848, came to this country and spent the remainder of his life here, establishing schools for defectives, writing and traveling. His methods of education have fallen into some disrepute, but are still held to by certain educators, such as Mme. Montessori.[28] The significant thing for us is his emphasis upon sense training, which is fundamentally a psychological method.

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[27]For an account of Seguin's life and work see, Holman, Henry: "Seguin and His Physiological Method of Education," London, 1914.

[28]His "Idiocy and Its Treatment by the Physiological Method" was published in 1864. (Cf.: *Teachers College Reprints*, 1907.) Of this work Dr. L. P. Brockett, a recognized authority on the subject, says, "The ulterior extension of this idea of the instruction of the young, in general by the Physiological Method . . . . appears to me the greatest discovery in methods of education since the time of Aristotle. Had it been given to the world, in the form the author desired, it would have merited for him a place much higher than that occupied by Pestalozzi or by Comenius." Cf.: Holman, *op. cit.* p. 35.

Among the other educational devices used by Seguin was the Form Board which he early designed from a suggestion of Itard's for the training of the feebleminded. A crude form board consisting of a square, a triangle and a circle of different colors which had to be fitted into the proper recesses, had been used by Itard in teaching the Savage of Aveyron. Seguin, on this idea, constructed a number of form boards. Montessori was the first to apply the form boards to the training of normal children, while as a testing device it was first employed by Norsworthy.[29] Its use since has been widespread and the number of modifications and adaptations almost innumerable.[30]

The details of Binet's work in devising the mental age scale and his battery of tests are so well-known that we need not repeat them here.[31] We are more interested in his professional development as it relates to this culminating effort.

Binet first studied law, then medicine, but after some time in the biological laboratory of Balbiani, he became concerned with experimental psychology. In 1889 he founded the first psychological laboratory in France at the Sarbonne. Binet's early cultural influences were those of a period when English associationism still dominated French thinking. John Stuart Mill was the "dictator of scientific method" and Taine was writing his earlier works. From his father, a physician in the south of France, Binet no doubt accumulated much of the medical lore of his day, with its place for psychotherapy, suggestion and hypnotism. As a student he heard Charcot lecture at La Salpetrière. It is a curious fact which Brett points out "that Binet never learned German and to a large extent seems to have been indifferent to the progress of psychology in Germany."[32]

More or less a free lance in science, Binet delved here and there as his fancy and interest directed him. His first book with Féré (1886) was on animal magnetism, then he went into the psychic life of micro-organisms, thence into the psychology

[29]"The Psychology of Mentally Deficient Children," *Arch. of Psych.*, no. 1.

[30]Sylvester, R. H., in "The Form Board Test," *Psych. Rev. Mon.*, 1913: v. 15, whole no. 65, gives a review of the history of form boards from Itard and Seguin down to his own work. It was used by Blair as a task in a study of learning before it was adopted by Norsworthy. There are now a large number of form boards. Cf.: Pintner and Paterson "Performance Tests," 1917, pp. 30-33.

[31]Cf.: Kite's translation of a number of papers by Binet and Simon in two volumes: "The Development of Intelligence," Vineland, 1916; and "The Intelligence of the Feebleminded," Vineland, 1916. Cf. also: Stern-Whipple *op. cit.*, pp. 1-27 and Pintner, *op. cit.* Chap. II.

[32]"History of Psychology," v. 3: p. 252.

of reasoning, of suggestion and over into psycho-pathology. In 1895 he published with Henri his scheme of individual psychology in his newly founded journal.[33] Later he began an elaborate study of the mental life of his two daughters in which he incorporated some of Galton's methodology in the study of imagery. His work in psycho-pathology indicated moreover that he "was moving away from Associationism to a different conception of the psychic life," one allowing for a concept of the entire personality, akin to the biological viewpoint which stresses the total ongoing adjustment-process of the organism.

Binet's subtlety, his facileness, his inventiveness remind one of Galton. Like the latter, Binet did not belong to any set "school," like him, his researches grew out of concrete and ever-changing practical interests. He was similar to Galton, furthermore, in that he was not systematic, was decidedly anti-metaphysical, which all made for much more practical ingeniousness and originality than might otherwise have been the case. Both Galton and Binet illustrate the creativeness of the "free" mind. Had these two men had the usual, the more formalistic regimen, it is not impossible that much of their intellectual courage would have been lost.

Nevertheless, it must not be imagined that Binet was not indebted to his predecessors and contemporaries. The same laws of cultural borrowing operate here as elsewhere and scientific progress, by and large, consists in minimal accretions to the body of knowledge and technique. Yet his own contributions to technological psychology are so striking that we quote the following summary from Brett at length:

> In Germany experimental work had tended to remain an appendage to physiology, an affair of nerves and reactions. Binet has the credit of moving on to comparatively new ground and attacking the intellectual life as a whole by experimental methods. The transitions which mark the different stages of Binet's career have an obvious logical sequence. Interested from the first in psychological phenomena as they are to be found in daily life, Binet carries the methodical principles of the laboratory into the street and the school. He constructs a bridge from the place of instruments and isolated problems to the complex world of characters. His range was thus extended from his earliest studies on micro-organisms to the beginning in 1895 of Individual Psychology, which was then a new department. A more determined movement toward the understanding of minds as unities was then set on foot. The results were intended to be practically useful and were quickly developed in the sphere of pedagogy and legal testimony.[34]

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[33]"La Psychologie Individuelle," *L'Annee Psych.*, 1895: v. 2: 411-465. In the following year he reported some results from certain tests, *ibid.:* 1896: v. 3: 296-332. Cf.: Mitchell & Ruger for references to much of his early work.

[34]Brett, *op. cit.*, pp. 252-3.

From this point on we have important work in mental fatigue, suggestion, and the establishment of experimental work in the schools. He had in these the collaboration of Henri, Belot, Vaney and Simon.

With this background and his *penchant* for the medical side of his work, the step from the study of the normal to the abnormal and defective was indeed a short one. Thus, when in 1904 the commission was given him to devise methods of segregating children in the public schools for more effective pedagogical purposes, he went ahead vigorously and the last seven years of his life were largely spent in developing this new method of estimating intelligence or capacity which we call the "mental test" scale. This test method, looked at from the whole, must be as Brett says "regarded as a great achievement." Although frequently much criticized "it works" and has proved of immense practical value.

It is significant that Binet was careful at the outset to make clear that his method was purely empirical and not a "measurement" in any technical sense whatsoever. In writing of the new method the authors, Binet and Simon, declare that:

> This scale properly speaking does not permit the measure of the intelligence, because intellectual qualities are not superposable, and therefore cannot be measured as linear surfaces are measured, but are on the contrary, a classification, a hierarchy among diverse intelligences; and for the necessities of practice this classification is equivalent to a measure.[35]

In a footnote, moreover, Binet is careful to indicate that he had already insisted upon this distinction between a measure and a classification.[36] This is of some importance in view of the recent development of statistical treatment of test results under the normal law of error and the growing assumption that intelligence is measurable in linear or correlational terms, by such men as Thorndike, Kelley and Spearman.

In Binet's critique of previous work in the study of the feebleminded one catches glimpses of influences which otherwise we might have lost. His review of the work of Seguin, Esquirol, Ireland, Bourneville, Voisin and Sollier is important. All these people while making changes and experi-

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[35] *L'Annee Psychologique*, 1905: v. 11: pp. 194-5, quoted by Kite in "The Development of Intelligence," 1916: p. 40. (The reference to the volume in Kite should be 11 not 12, cf.: p. 37 of same.) Simon's contribution throughout may be thought quite secondary to Binet's. We shall, consequently, discuss only the work of the major author of the scale.

[36] Cf.: Binet, A.: "La Suggestibilite," 1900, p. 103 for this in detail.

ments in methods of examining and classifying the feeble-minded proceeded by rule of thumb technique. Throughout they lacked an objective basis for their diagnosis and classifications. Binet was convinced that "quantitative differences . . . are of no value unless they are measured, even if measured but crudely."[37] Although Seguin proceeded with what was a psychological method it was Sollier who first proposed a psychological classification of feeblemindedness in terms of degree or quantity. He made attention, moreover, the keynote to intelligence. This latter notion Binet criticizes severely all the while recognizing the importance of Sollier's preparatory work.[38]

To Blin and his pupil Damaye, Binet and Simon appear most immediately indebted. As we have noted Binet had the notion of intelligence testing in his studies of individual differences in school children and in his extensive investigation of the mental life of his two daughters. Yet the scale did not come full-fledged into his mind. A study of the history of the scale itself is absolutely necessary to understand its gradual growth. However, Blin's work in 1902 and that of his pupil in 1903 preceded Binet and Simon's endeavors of 1904, 1905, 1908 and 1911.[39] Blin devised a rough set of tests for measuring capacity with a scale from 0 to 5 for recording degrees of success with the same. He had no notion of mental age, but expressed the results in terms of what we now call a *score.* Binet's reaction to this work in 1904-05 is noteworthy, for it reveals something of his own beginnings toward scale making.

Blin is criticized first for the random selection of tests, some obviously scholastic and dependent on adventitious education, others probably truly diagnostic of intelligence. In the second instance, he is criticized because of the subjective method of estimating how much the child shall receive on each reply. Third, in the choice of individual tests in the scale the matter of gradation of difficulty is not cared for. The gradation did not take into account the idea of mental age. Fourth and last, the whole plan is clearly too scholastic. On the whole the Blin-Damaye "system constitutes a scale established *a priori.*"

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[37]*L'Annee Psych.*, "Du Niveau Intellectuel des Anormaux," 1905: v. 11: p. 178.

[38]*Ibid.*, pp. 179-80.

[39]Blin: "Les Debilités Mentales," *Revue de Psychiatrie*, Aug. 1902. Damaye: "Essai de diagnostic entre les états de debilité mentale," Thesis at Paris, Steinheil, 1903.

In the history of the entire testing movement, however, it is important to note that we have in Blin's method of scoring the same general plan which in the hands of Cattell and Thorndike was being elaborated by more exact statistical procedure. At the present time the entire tendency is gaining ground to state mental levels in terms of scores rather than that of mental ages. Thus in the present welding together of the idea of score with the idea of mental age, we have brought together two notions which Binet thought completely incompatible in 1905. Of the score method the latter wrote:

> Consequently there is no room for surprise, if we do not find in this collection of questions, any idea upon the gradation of intelligence. This child who has passed through this rolling mill[40] comes before us with a certain total of marks, 36 for instance, or 70. We understand that 70 is nearer normal than 36 and that is all. We have no precise notion of the mental level of these candidates, no notion of what they can or cannot do. Did the one who obtained 36 have any comprehension of abstract ideas? We do not know, and cannot divine. How much is he behind normal children of the same age? We know this no better. . . . [41]

Binet's insight into the difficulty of the score method without standardization on an age scale is evident. Moreover, his criticism of the lack of any differential diagnosis in the mere arithmetical statement of a score is pertinent, since we do not know whether the particular pupil obtained the same by answering questions of a simple perceptual nature or by solving a difficulty involving the higher mental powers. Throughout the whole development of his scale Binet holds firmly to the qualitative features of his scheme. While he attempts standardization, at least in the 1908 and 1911 revisions, his idea seems ever to express by the ingenious notion of mental age the real qualitative difference between pupils. Too frequently in our recent craze for the statistical refinement of his and other scales we have tended to forget his own valid criticisms of just this danger.

A word about Binet's idea of intelligence. He early suggested what others subsequently proved, that the notion carries fundamentally a capacity which is not describable

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[40]The French word is "L'laminoir" literally a "flattening machine." Critics of tests have spoken disparagingly of "putting children through the mill," of subjecting them to a kind of "machine." It is a curious touch to read Binet's reference to his immediate predecessor's test in the same deprecating fashion as Lippmann, for instance, refers to the Binet scale. Cf.: *New Republic*, Oct. 25, 1922, and the five following issues.

[41]*L'Annee, op. cit.*, p. 190. Binet was also indebted to Van Biervliet's, "La mesure de l'intelligence," *J. de Psych.*, 1904: v. 1: 225-235 for notions on intelligence measurement.

in terms of sensory or even perceptual factors.[42] It is essentially something integrative and involves the higher mental powers.

On the whole, then, we may say that Binet's gradual development of his point of view and technique in his early studies was a preparation for the opportunity which came in 1904 to make a great contribution to the study of human endowment and individual differences. His chief contributions are: First, his notion of a study of the individual's higher capacities rather than the atomistic study of sensation as in German psycho-physics; second, his conception of a scale, a battery of tests arranged and graded according to the average for various chronological levels; third, the significant idea of mental age. The individual tests are taken from Ebbinghaus, Oehrn, *et al.*, and from his own earlier researches. It was his fashion of putting them together as instruments for sinking shafts at critical points into the individual's mind and thereby getting an objective idea of his rating in comparison with others that is novel. No matter how his scheme may be criticized and how much it may be shown to measure acquired materials rather than intelligence conceived as innate, the fact remains that Binet's work, more than any other, directed the current of modern psychology toward the study of the individual as a whole, to a view of the province of psychology as decidedly practical and as touching distinctly upon man's social life and behavior.

Aside from Binet's own early work which prepared him and his contemporaries for his culminating effort, the work of

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[42]Binet maintained early that to examine the senses in the manner of the psycho-physicists would be futile. These capacities are not the significant ones in intelligence. . . . "To judge well, to comprehend well, to reason well, these are the essential activities of intelligence . . . Laura Bridgman, Helen Keller . . . were blind as well as deaf, but this did not prevent them from being very intelligent. Certainly this is demonstrative proof that the total or even partial integrity of the senses does not form a mental factor equal to judgment . . . " (*L'Annee, op. cit.*, p. 197.) Cf.: Aitkens & Thorndike, "Correlation among Perceptive and Associative Processes," *Psych. Rev.*, 1902: v. 9: 374-382 and other studies which have shown us the substantial correctness of this view, at least from the statistical analysis. There is in Binet's definition of intelligence as a "fundamental faculty" the assumption of some sort of common factor which is akin to what Spearman and Garnett have worked over statistically. (Note. The word "faculty" is probably poorly chosen by the translator, Miss Kite. Binet writes: "Il y a dans l'intelligence, nous semble-t-il un organe fondamentel. . . ." The word "organe" were better translated as synthetic agent or medium, the word "faculty" carries to the English reader the notion implied in "faculty psychology" which is evidently not what Binet meant, in view of his continued emphasis upon the study of the unity of the personality.)

Bourdon should be mentioned. In fact, Bourdon it was who inaugurated the experimental investigation of association in France and in this way helped lay the foundation for subsequent work in mental testing, which took over so largely the materials from studies in association.[43] In a paper in 1895 he first made use of the so-called cancellation test which was to prove so popular in the subsequent studies on fatigue and perceptual discrimination.[44]

Bourdon seems to have had, moreover, some notion of general intelligence, for in his 1894 paper on the influence of age upon memory he used teachers' estimates of intelligence of the pupils for comparative purposes.[45] The subjects ranged from eight years to twenty years in age.

The reaction of Binet's contemporaries to his scale was various. It is well-known that neither in France, in Italy or in England has his work been accepted with the fervor with which it was taken over in Germany and in the United States. Nevertheless a number of applications and criticisms of Binet's scale and method eventuated from his own and neighboring countries which should be mentioned.

In 1906, Decroly, a Belgian psychologist, presented a paper bearing on the close correlation of Binet mental ages and other "mental and physical manifestations" at the second congress of experimental psychology held at Würzburg. This not only served to call the attention of the German psychologists further to the novel work of Binet, but the preliminary study on which this report was based led to further work.[46] It was the study of Decroly and Mlle. Degand in 1910 which instituted the vigorous discussion which has been going on since that social status and educational opportunity affect the child's responses to the tests, moreover that some of the tests are decidedly academic, while others are too obviously

[43]Cf.: Warren, *op. cit.*, p. 236. Bourdon in a paper in 1891 urged the need for experimental work in association. He published some of his own results as early as 1893. Warren believes Bourdon was practically unaffected by the researches of Galton, Kraepelin, Cattell or others of the time.

[44]"Observations comparatives sur la reconnaisance, la discrimination, et l'association," *Rev. Philosoph.*, 1895: v. 40: 153-185.

[45]"Influence de l'âge sur la mémoire immediate," *Rev. Philosoph.*, 1894: v. 38: 148-167.

[46]"Intelligenzmessungen bei normalen und abnormen Kindern," *2te Kongr. exper. Psychol.*, Würzburg, 1906. Leipzig (Barth), 1907. Cf.: Kohs' bibliography. In 1909, Decroly presented a paper at the sixth congress of experimentalists upon the classification of defective pupils in the schools at Geneva, and again at Brussels in 1913 a paper on the mental testing of juvenile delinquents before the third congress of neurologists and psychiatrists. Both of these mentioned Binet's work.

based upon adventitious learning at home.[47] The social-economic ranking of the families from which the children came in the case of Decroly and Degand was different than that of the class of children upon which Binet standardized his scale. Moreover, the tests were too easy during the early years and too difficult in the upper ranges. On the basis of this criticism, in part, and in part from their own experience with the test, Binet and Simon made the second and final revision of the scale in 1911.

Vaney began the application of the Binet tests to sub-normals and reported very favorable results in all cases.[48] He used the scale for diagnosing feeblemindedness, for segregating the defectives in the schools and finds throughout a close correlation between the development of intelligence as revealed by the tests and the child's progress in school work.

Mlle. Descoeudres reported in 1911 two applications of the scale suggesting improvements and adding tests. In the same year Morlé reported a paper on the influence of the social status upon the degree of intelligence in the child. In 1912, D'Allonnes published a book upon the feebleminded in which he designated a method of testing based upon the Binet-Simon scheme. In this year also, Cruchet gave out his results on the scale, maintaining that it is quite unsatisfactory for young children. He probably had in mind the common criticism of that period that the scale was too easy and the tests too few for the younger years. Lapie used the tests, in part, in a study of a mixed group of advanced and retarded pupils.[49]

It seems that about the time Binet published his first results in 1905, Professor Sancte De Sanctis of the University of Rome, who had been working with the feebleminded, was feeling his way toward some sort of scale for the measurement of mental defect in much the same way that his French contemporary had. Early in 1906 he presented his own scheme of tests with an accompanying criticism of Binet's 1905 series. De Sanctis recognized the need of a graded arrangement of tests, furthermore he wanted to express quantitatively the degree of mental defect. This he did by putting the child through his scale of six problems, expressing the child's intelligence level by noting how many of the tests he

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[47]"La mesure de l'intelligence chez des enfants normaux d'apres les tests de MM. Binet et Simon," etc., *Archiv de Psychol.*, 1910: v. 9: 81-108.

[48]Cf.: Kohs' bibliography, *op. cit.*, p. 342 for a list of Vaney's papers.

[49]For references and some notes on all these studies see Kohs' bibliography.

could pass successfully.[50] In 1911 De Sanctis published an article in English which discussed the theoretical basis for a test series and gives his own scale.[51] Both Whipple and Goddard had made this scale familiar to workers in this country. Under the former's direction it was introduced and used in the Vineland laboratory and there it was standardized by Miss Martin.[52]

De Sanctis, therefore, has the place of producing the first scale after the preliminary work of Binet. While his schema has never proved as fruitful as the latter's he must be given recognition for stressing the gradation of intelligence and for bringing forward, moreover, the notion of two prominent levels of intelligence, one of lower, one of higher ideation. He did not accept the thesis, however, "that intellectual defect in defective children and dements corresponds 'to the degrees of intellectual development in the ages of growth.' "[53]

Mme. Jeronutti, working apparently at the stimulation of De Sanctis, made a number of comparative researches into the relative value of the Binet scale with the former's. She also used the Binet scale alone, but came to the conclusion that social status affected test results very markedly.[54]

In 1908, Ferrari translated the Binet-Simon test scale of that year into Italian.[55] However, like his countrymen, he felt convinced that his own test which he used on the defectives presented a more adequate picture of the facts to be known than did the Binet mental age concept. Binet replied to these criticisms in 1910,[56] as well as to those of others. His criticism was chiefly taken up with indicating the persistence of subjective factors in these methods and holding to the superiority and greater convenience of his theory of mental age.

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[50]"Types et degrés d'insuffisance mentale," *L'Annee Psychol.*, 1906: v. 12: 70-83. This paper was published at the same time in Italian and German, the above reference being the most available to American readers. Cf.: Kohs, *op. cit.*, for additional references on De Sanctis' papers.

[51]"Mental Development and the Measurement of the Level of Intelligence," *J. Educ. Psych.*, 1911: v. 2: 498-507.

[52]"A Contribution to the Standardization of the De Sanctis Tests," *Tr. School Bull.*, 1916: no. 14.

[53]Quoted from Freeman, F.: "Review of Tests," *Psych. Bull.*, 1912: v. 9: 218.

[54]Cf.: Kohs' references, *op. cit.*

[55]"Come si mesura lo sviluppo dell' intelligenza nei bambini normali," *Rivista di psicol.*, 1908: 465-471.

[56]"A proposito delle 'Ricerche di Psicologia individuale nei Dementi' di Baroncini e Sarteschi," *Rivista di psicol.*, 1910: v. 6: 184-5. Baroncini and Sarteschi had used his tests with the insane.

Taking their cues from the work of Decroly and Degand and Jeronutti, two Milanese psychologists, Treves and Saffiotti began in 1909 the most extensive use of the Binet scale which had up to that time been attempted. They felt, first of all, that the original scales had not been sufficiently well standardized and convinced from their general observations and from the work of others that the socio-economic factors in reference to educational opportunity play an important part in the child's success with the tests, they went ahead to re-work the entire series to suit their own needs and notions more adequately. In 1910-11 they translated the 1908 scale, with preliminary criticisms.[57] In 1912, Saffiotti presented a summary of his work and further results after 1910-11 in an article in *L'Annee Psychologique* at the editor's (Binet's) request.[58] In order to insure an adequate statistical sample these workers took over 600 children from the six grades of the elementary schools of Milan and also from diverse social classes. They discovered very noticeable differences in the performance of children of the same chronological age but of varying social status. They resolved, therefore, to attempt an entirely new grouping of the tests and began giving all the tests to all the children, no matter what age or social condition. This gave such a spread of results that they concluded that no common denominator, like mental age, could ever be applied universally. Accordingly they rearranged the entire gamut of tests in terms of difficulty as shown from their own statistical sampling and arrived finally at a classification of ability in terms of dull, average and bright. Each of these three had three sub-divisions, making nine in all, but for general uses these authors preferred the common three-fold classification. While not opposed to statistical treatment of test results, they held throughout that cultural and racial factors must be taken into account in all standardizations, which meant accordingly that comparisons of various ages, classes and races were impossible in terms of one standardization alone.

Moreover, they attacked the entire theory of Binet that the scale tested "pure intelligence." They denied the exis-

[57] "La 'Scala metrica dell' intelligenza' di Binet et Simon," Milan: 1910-11.

[58] "L'échelle de l'intelligence Binet-Simon modifiee," *L'Annee*, 1912: v. 18: 327-340. While this article was being prepared both Binet and Treves died. Saffiotti completed the review of his own and his master's work, and at the close of his paper paid Binet the following tribute:

"L'échelle métrique de l'intelligence nous a donné une orientation, elle a ouvert tout un champ nouveau de recherches, d'etudes, d'application qui ne sera pas abondonne; elle restera un titre precieux a l'activité scientifique d'Alfred Binet." (P. 340.)

tence of such; they questioned whether it was good scientific method and interpretation to assume it. They write:

> The intelligence develops under the influence of the *mileau*, moreover this environment is principally, for children at least, the school with its instruction. Furthermore, all the responses to the tests reveal this influence of school instruction. . . .
>
> What is this intelligence, independent of culture, which the scale pretends to measure? Is it an intelligence which develops itself aside from all external influences? . . . The intelligence, as the supreme expression of the total personality, demonstrates, in the last analysis, the capacity of the individual to adapt himself to the social life. . . .[59]

This contribution is mentioned at some length because it foreshadows much of the present discussion going on in this country today concerning the hereditary and unchanging nature of "general intelligence." We see in the statement of these Italian scholars a standpoint much more like that of the cultural anthropologists, Boas, Thomas, Lowie and their followers, Lippmann, Dewey and Bagley in this country. To Treves and Saffiotti, furthermore, the whole concept of mental age and "pure intelligence" had no psychological significance, and what was more, little pedagogical importance so long as these cultural factors were ignored. Binet realized, just before his death, how wide the discrepancy was between his own approach and that of his co-laborers in Italy.[60]

Another important emphasis which these writers made was the danger of confusion from the use of the Binet tests and the concept "mental age" in mistaking children who were backward educationally with those who were really defective. This is also in line with discussion since that date in our own country over an Intelligence Quotient definition of feeblemindedness. (Cf. Section V.)

Other continental reactions to the Binet scale are illustrated by Schreuder's paper in 1911, wherein he applied to the test-results, mental ages, Quetelet's binomial curve and the curve of Gauss, finding that the results conform very closely to these probability curves.[61] Schubert applied the tests to defective school children in Russia.[62] And a private institution for retarded children, located in Warsaw, made use of

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[59]Saffiotti, *op. cit.*, p. 339, 340.

[60]Cf.: footnote, *ibid.*, p. 340.

[61]"Yets over Verstandsmetingen," *Pädogog. Tydsskr.*, 1911: v. 3.

[62]"Versuch einer Anwendung der Methode von Binet auf die Erforschung der russischen defektiven Kindern," by H. Reybekiel. The original paper was presented at First Russ. Cong. of Exptl. Psychologists, 1910. Kohs' reference is apparently incorrect.

the tests as early as 1910-11 for classificatory purposes.[63] Since this time, of course, the tests have become practically universal and most development has been in the way of expansion and modification of the scales.

Throughout the entire development of the mental test from the French side we may discern the influence of medical psychology. The principal interest is in the classification of the mentally defective. The notion that the scale should be applied to industry, to normal-minded school children for pedagogical classification, to races for comparison, or to the army was much less emphasized if even considered probable.[64] It remained for the American and the English psychologists to refine the statistical treatment of results and to make applications wherever conceivable.[65]

IV

The English Contribution and the Statistical Method

If the German influence on mental testing was in the nature of experimental method and the production of certain separate experimental materials later utilized for tests, and if the French contribution was one presenting the first complete scale and the concept of mental age, with emphasis throughout upon the medical side—the treatment and classification of the feebleminded, the English emphasis has been on the statistical treatment of the test data with materials largely drawn from normal-minded school children and adults.

It is to Francis Galton (1822-1911) that we owe most in stimulating and beginning the experimental study of associative processes and relating the same to the problem of individual differences. Moreover, he first conceived the idea of applying the method of Quetelet to the treatment of the results of such experiments. Not only that, but he went into the street and schoolroom or drawing room, if need be, for his data. Experimentation to him need not be confined to brass instruments in a cold and de-personalized laboratory.

[63]Zylber, D. et Lublimer, E. "Institut pour enfants arrières a Varsovie," *1. Congr. intern. de psychol.*, Bruxelles, 1911.

[64]Binet gave some thought to the possibilities of devising tests for efficiency and intelligence of soldiers.

[65]The work of Rossolimo ought to be mentioned as indicating an attempt at tests which would put before the psychologists a sort of clinical picture of the individual. His psychograph while using the older categories of psychology: will, attention, perception, memory, comprehension, etc., is based upon the notion of unified personality, rather than of one part of personality or intelligence. Miss Parker has presented a review of Rossolimo in *The American Journal of Insanity*, 1916-17: v. 73: 273ff.

We have already noted the likeness of Binet to Galton. The latter was really an intellectual adventurer in science. With no formal background in psychology, anthropology or sociology, his researches have greatly affected all three fields. His is the place of one of those ingenious, unique persons in a critical period of re-orientation in science, whose incisiveness, imagination and plunging count so much in subsequent development. He has been called by Professor Boring "the father (in large part) of mental measurement, of individual differences with respect to traits, with Fechner and Charcot of ideational types, the originator of the questionnaire and of the theory of eugenics."

In the history of psychology, of course, Galton owes his point of view to the current associationism of his day. It is doubtful, however, if he had any systematic interest in the same. His whole cast of mind was rather more the practical. He was, needless to say, caught in the *Zeitgeist* which demanded quantitative measurement in all the sciences.[66] Galton was obviously affected by current insistence upon mathematical statement of all things scientific when he wrote, "that until the phenomena of any branch of knowledge have been subjected to measurement and number, it cannot assume the status and dignity of a science."

Galton's interest in variabilities grew out of his contact with the work of his illustrious cousin, Charles Darwin. Galton carried over the method of measurement in variability from the demographers and biologists, without going through the traditional psychological point of view as did Wundt. With him the interest was one of quantitative measurement of character traits, mental imagery, associative processes in reference to the needs of the man on the street and practical social controls. We want to study man's capacities for predictability in the applied or technological sense. To the Wundtians, technology is not the province of a science at all, the latter involves true enough results from science, but also takes in much from art and is more closely related to the latter in one sense than to the former.

The first paper of significance which led the way in the study of individual differences and association was published in 1879.[67] In 1883 appeared the first edition of "Inquiries into Human Faculty" in which a number of studies are reported, bearing on imagery, traits, statistical methods and other preliminaries which have been elaborated by

[66] *Encyclop. Brit.*, 1910: v. 11: p. 427.

[67] "Psychometric Experiments," etc., *Brain*, July 1879: v. 2: 149-162.

others since. As early as 1869 in his "Hereditary Genius" Galton had given indications of his interest in mental heredity and this work stimulated a line of endeavor looking to a study of great men. Among the well-known names of investigators in this field are: Ellis, Odin, Woods and Ostwald. This tendency to the study of mental inheritance has come into the direct stream of mental testing today when much discussion is going on concerning the constancy of the I. Q. and the hereditary factors back of racial and individual differences. We shall touch on this slightly at the close of the present paper.

In 1888 Galton presented before the Royal Society a good deal of his anthropometric data with methods of correlations for comparing various sets of measures with each other.[68] In the next year his "Natural Inheritance" was published.

During the eighties, Galton established at the South Kensington Museum in London a sort of laboratory for giving anthropometric and psychometric tests. Here, for a small fee, one might have his various capacities, physical and mental, measured. In 1904 he founded at the University of London the eugenics laboratory which bears his name.

In all his work Galton emphasized the need of statistical treatment by the methods of averages, measures of dispersion and correlation. It is due to his impress upon applied psychology that we have become today so engrossed in this method.

His pupil, Carl Pearson, carried on a number of statistical investigations which have made his name known throughout the world for his contribution of statistical method in eugenics, anthropology and psychology. Pearson (1857—) became associated with Galton in the early nineties and is today the foremost living exponent of statistical methodology. His first important paper appeared in 1894.[69] A number of important papers followed in which he developed the use of the Gaussian normal curve of error as a method of treating deviations, and in 1896 he published his paper which gave us the present well-known device of computing correlations by the product moment method.[70] Nevertheless, while Pearson seems to have held to the normal law as valid for biological data he was doubtful of its universal applicability

[68]Cf.: *Proc. Royal Society*, 1888: v. 45: 35ff.

[69]"Contributions to the Mathematical Theory of Evolution," etc., *Phil. Trans. Roy. Soc.*, London: 185: A: 71-110.

[70]Section III of above paper: "Regression, Heredity, etc.," *Phil. Trans. Roy. Soc.*, 187: A: 253-318. Cf.: Davenport, C. B., "Statistical Methods," 1904, for extensive bibliography of Pearson up to 1903.

to mental measurement in his early work. But in 1904 and again in 1914 he was insisting upon the universality of the Gaussian law.[71]

The establishment, in 1901, of the journal *Biometrika*, and the publication, in 1914, of "Tables for Statisticians" were two invaluable contributions of Pearson to the whole problem of biometrics, as it touches physical as well as mental characteristics.

No doubt partly under the general stimulus of the statistical treatment of mental phenomena, but more likely directly stimulated by his study with Wundt and his contact also with the Würzburg School, Carl Spearman put forward, in 1904, his paper dealing with hierarchy of correlations and the production, statistically, of evidence of two factors operating to make these intercorrelations.[72] This paper meant the opening of a controversy about the nature of intelligence as determined by statistical treatment that is still going on. Moreover, it is bound to be related to the notion of general intelligence, as thought of by Binet and as expanded by Terman and others in this country.

Recently in the work of Webb[73] and of Garnett[74] we have had discussion and elaboration of the common factor theory, although the latter insists on calling his second factor, a group factor. There has been a somewhat implicit assumption on the part of some to believe that this "common fund

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[71]Cf.: Boring, *op. cit.*, ref. 5. The use of the Gaussian law as a method of standardizing tests has become universal. Boring's article is practically the only thorough-going critique of this method in this country. Years ago, however, G. U. Yule, one of England's foremost statisticians, criticized rather severely not only the use of the Bravais formula for such data as Pearson had, but went further and raised pertinent questions of scientific methodology in much of Pearson's work. Cf.: references in Davenport, *op. cit.*, also "On the Influence of Bias and Personal Equation in the Statistics of Ill-Defined Qualities," *J. Roy. Anth. Institute*, n. s., v. 36: 325ff. Unfortunately few American workers with tests recognize either the criticisms of statistical methods by Yule, or his objection to the subjective nature of much of the material which is put under statistical formulae.

[72]" 'General Intelligence' Objectively Determined and Measured," *A. J. Psych.*, 1904: v. 15: 201-292. One of these factors was a "common" one to all mental functions, the other, in each case was a specific factor.

[73]Webb, E., "Character and Intelligence," *Br. J. Psych. Mon. Supp.*, 1915: v. 1: no. 3. Webb was a student of Spearman's. He thinks that he has found another common factor in the personality besides the g of his master, which he terms "persistence."

[74]Garnett, M., "Education and World Citizenship," 1921. In this book he reports earlier studies. Cf.: his original papers, in part, "General Ability, Cleverness and Purpose," *Br. J. Psych.*, 1919: v. 9: 345ff. He makes cleverness a common factor.

of intellective energy" which Spearman posits as his *g* is innate. Garnett, at least, would not go so far.

In 1919-21, Thomson attacked the hierarchy theory of Spearman maintaining on the basis of dice-throwing that a hierarchy may be produced without any other factors than chance operating to produce the same. He believes that the *g* is nothing else than a phenomenon arising from the chance overlapping of group factors. This interesting controversy is still going on.[75]

In 1909, Cyril Burt made the most extensive study of general intelligence using statistical procedure which had been attempted up to that time.[76] He here attempted to find the correlations between estimated general intelligence (from persons: teachers, *et al.*) and sensory tests on the one hand, and tests of the higher thought processes on the other, in order to discover, if he could, the nature of the factor or factors making for general intelligence. His results he interpreted as showing a common factor, similar to that found by Spearman, which seemed to indicate to him the existence, on the qualitative side, of some common principle, possibly attention, which runs throughout the entire gamut of mental functions, but which operates at a constantly higher level of efficiency, as it were, from sensory-motor materials up to the highest forms of mental adjustment, involving seeing relations, judgment, reasoning, etc.

Moreover, Burt maintained that he had shown, not only proof of general intelligence, but that the same was innate. Thus in his study we have a definite bringing together of the notion of *g* as the common factor with the notion of general intelligence as some sort of unit character which follows the Mendelian laws. It is true that Galton, in his studies of genius and natural inheritance, had held to the hereditary theory throughout.

The Binet scale proper seems to have been introduced into

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[75]Cf.: Brown and Thomson, "Essentials of Mental Measurement," 1921, chapters 9 and 10 for discussion. See also the references in their bibliography. More recently on the controversy are: Spearman, "Recent Contributions to the Theory of 'Two Factors'," *Br. J. Psych.*, 1922: v. 13: 26-30; Spearman, "Further Note on the 'Theory of Two Factors'," *ibid.*, 1923: v. 13: 266-270. Garnett, in his review of Brown and Thomson's book, *Brain*, 1921: v. 44: 332-337, discusses the problem of hierarchy, showing the statistical error of the authors in assuming that a hierarchy may not be assumed when the correlation is plus or minus 1.00. This was essentially Spearman's contention and the reason for his attenuation formula.

[76]"Experimental Tests of General Intelligence," *Br. J. Psych.*, 1909: v. 3: 94-177.

England about 1909-10. Some of the first results were published by Miss Johnston.[77] The technique of much of this early work was crude.

In 1921, Burt published the results of nearly ten years' work with the Binet-Simon tests.[78] This book presents one of the best and one of the most careful revisions at hand. Burt's insistence throughout on adhering very closely to the original technique has much to commend it.

Abelson, in 1911, made use, as did Burt, of some of Binet's tests, in examining a group of defective children. He used outside estimates of general intelligence and compared the same with his test results.[79] He advocates, as the results of his study, the use of a wide variety of tests. He does not accept the Binet mental age notion as valid for borderline pupils of the type he examined. He prefers to state their performance more qualitatively and make "allowance for age."

Recently Spearman has published a book, "The Nature of Intelligence and the Principles of Cognition" (1923), which is really an attempt to use the notion of general intelligence to cover the whole range of thought processes, and to be the central focus of all future psychology. Intelligence is decidedly a mentalistic phenomenon, not confused, as so often in this country, with capacity to learn; it is rather better conceived as the principle which makes for the "cognitive operation" of "educing relations," and the still higher result in "educing correlates" which is the highest attainment of the intelligence. Both these two latter principles are non-experiential, in the sense in which the Würzburg school uses the term to describe "consciousness of relations" and "imageless thought." In fact, Spearman's entire thesis may be thought but a restatement of the position of those

[77] "M. Binet's Method for the Measurement of Intelligence," *School World*, 1910: v. 12: 391ff. The tests were made in Sheffield.

[78] "Mental and Scholastic Tests," 1921, 2 ed. London (P. S. King & Co.). Cf.: W. Lippmann's reviews of the same: *New Republic*, May 2, 9, 16, 1923: v. 34: nos. 439, 440, 441. Mr. Lippmann probably misconstrues Mr. Burt's position concerning inheritance of mental ability, since the latter is convinced that the Binet tests are at least half scholastic and therefore under the domination of environmental factors. He does not, however, necessarily thereby give up his thesis of 1909 "that superior proficiency at intelligence tests . . . was inborn." He is only critical of the Binet tests as measures of innate ability. Lippmann in his eagerness to combat the standpoint of Terman and McDougall misconstrued Mr. Burt's criticism. Evidently, furthermore, Lippmann did not know of Burt's earlier work.

[79] "The Measurement of Mental Ability of 'Backward' Children," *Br. J. Psych.*, 1911: v. 4: 268-414.

followers of Külpe who have maintained the existence, for psychology, of an entire group of phenomena only indirectly related to the sensation and image, which latter the Wundtians would make the basis of their particular system and by which they would explain the higher thought processes. The standpoint of Spearman, like that of the Würzburg school, is thought by the present run of American psychologists, with their leaning toward realism and naturalism, to be decidedly idealistic if not to say mystical. Such books as Professor Spearman's show the implications of such theories as those held more or less nonchalantly by the bulk of applied psychologists who banter the term "general intelligence" about, little cognizant of its metaphysical trappings.

The present trend in mental testing in England is decidedly critical. Immediately after the war, there was a marked tendency on the part of the English psychologists to believe that the results of their American contemporaries in testing the army recruits had brought intelligence measurement into psychology to stay, and that, moreover, their success had proved the complete usefulness and high value of such methods. Today, upon more careful application and expansion of tests among themselves, they are decidedly more conservative. The recent work of Gordon, for instance, in showing that mental tests and scholastic tests measure the same thing, means that the controversy concerning innate intelligence and the difference between educational and mental tests is not yet over.[80]

The English contribution to mental testing has been largely that of refining statistical methods of treating large distributions of test data, and with Spearman the statistical method has led to a theory of general intelligence which connects with the systematic psychology of the Würzburg school. Furthermore, the work of Pearson, Burt and others lends, from the statistical side, at least, support to the older thesis of the master, Francis Galton, that mental ability is inheritable in terms of the known laws of heredity. However, if such work as Gordon's goes on, we may look for a weakening of this extreme position, even from the statistical side. Curiously enough, England has also produced in Yule, the more searching critic, aside from Boring, of the entire assumption of statistical treatment of the tests, especially in the prevalence of the methods of Gauss and Quetelet. While not an experimental psychologist, Yule is thoroughly grounded

[80] "Mental and Scholastic Tests of Retarded Children," *Bd. of Educ. Pamph.*, no. 44, City of London, 1923.

in scientific method. We shall want to refer in some detail to his criticisms at the close of the present paper, for what he says applies with equal force to most of the work now being done in this country as well as in England and Germany.

V

The American Contribution and Present Divergent Trends

While mental measurement in relation to individual differences in most phases had its origin in Europe, it remained for American psychologists to bring the movement to its present fruition. The man who stands pre-eminent in this is Cattell, on the statistical side, while the influence of Hall in his genetic study of the child must be considered important in stimulating the study of individual differences on the diagnostic side.

The course of psychology in this country has taken four distinct trends. The first, more in line with the Wundtian standpoint, has held to the formalistic, structural psychology with emphasis upon psycho-physical experimentation. Here the name of Titchener is best known. The second has attempted to be experimental, in the strict sense, but has oriented itself under the title "Functionalism," toward a biological viewpoint, emphasizing act or behavior rather than conscious content. The names of James and J. R. Angell are best known here. The Watsonian behaviorism is an extreme development of this biological approach. The third tendency has been the genetic study of children and adults. The names of Baldwin and Hall suggest themselves as typifying this school. Under the latter the questionnaire method became popular. To both Baldwin and Hall, the evolutionary concept was all-important for psychology. Both held, moreover, to the theory of recapitulation and the latter has used it constantly as an explanation principle in genetic psychology. The fourth group, under the leadership of Cattell, Woodworth and Thorndike has emphasized individual differences, dealing with these by the statistical method and interested primarily in the application of psychology to education, industry and the social world generally. This latter group has produced no consistent systematic view, but might be thought of as sympathetic with a biological, objective standpoint.

Besides these, there has been the group of psychologists whose work carried them into the borderline with medicine, through their research with the feebleminded and the insane. Nearly all of these men got their stimulation from Hall, but

several of them have leaned heavily upon the statistical method developed by the Columbia men. The best-known workers in this field are: Huey, Goddard, Kuhlmann, Terman and Wallin. Their work may be thought of as dovetailing between groups three and four above.

In all these lines of work, however, there has to date been really no first-rate attempt at synthesis. The psychological growth in this country has been decidedly polymorphous in nature. Aside from Boring, none of the Wundt-Titchener school has offered any significant criticism of mental testing methods. No one has contrived a systematic connection between behaviorism and the work of the intelligence testers. There is just now an inkling of the nexus between learning and intelligence in the work of Peterson and Ruch.[81] We shall return to the need of synthesis in this work at the close of the present paper. Let us review, briefly, the major lines of study which have made American psychology the most widely known for its mental test movement.

It was Cattell (1860—), says Professor Thorndike, who "was perhaps the first rebel from within the ranks of psychologists" to set his face against the narrowness of the Wundtian School where individual "diversities were hidden in averages, or even discarded as erroneous." Galton, we have noted, had already made his preliminary attack on the problem of association and reaction times. Cattell attempted to study association time in the laboratory under exact conditions. Cattell's earliest paper in which there was recognition of the importance of individual divergences was published in 1885.[82] In his second paper[83] Cattell was bold enough to declare, in reference to reaction times, that "the individual difference is a matter of special interest." Wundt opposed any tendency toward the study of individual

[81]Peterson, "Intelligence and Learning," *Psych. Rev.*, 1922: v. 29: 366-389. Ruch, "Correlations of Initial and Final Capacities in Learning," *J. Exptl. Psych.*, 1923: v. 6: 344-356. Ruch's study dealing with the relation of intelligence to learning is reported in press. Cf.: Wheeler, R. H. "A Psychological Description of Intelligence," *Psych. Rev.* March, 1924.

[82]"Über die Zeit der Erkennung und Benennung von Schriftzeichen, etc.," *Phil. Studien*, 1885: v. 2: 635-650. Here he published complete tables of individual reagents' reactions and made mention of differences.

For a summary of Cattell's contributions to psychology and education see, "Psychological Researches of James McKeen Cattell" by some of his pupils (Henmon, Dearborn, Wells, Woodworth, Hollingworth, Thorndike), *Columbia Cont. to Phil. & Psych.*, 1914: v. 22: no. 4. The quotations above from Thorndike are from this volume, p. 92.

[83]"Ueber die Trägheit der Netzhaut und des Sehcentrums," *Phil. Studien*, 1885: v. 3: 94-127, esp. p. 127. For English translation of this paper, see *Brain*, part xxxi: 1885.

differences in themselves[84] and Cattell began to find other outlets for his studies. In 1887 he published a paper on the association of ideas in *Mind*. This was followed by another, in 1889, written with Miss Bryant, who had already made some experiments upon school children on mental association, and in 1890 he published his notable paper "Mental Tests and Measurements" to which Galton appended a series of footnotes.[85] These papers all dealt with individual differences and may be considered as significant in introducing to the English-speaking psychologists, once and for all, the importance of mental measurement. In 1886-7, on his way home from Wundt's laboratory, Cattell called upon Galton at South Kensington Museum, where the latter had set up apparatus and devised methods for giving various physical and mental tests. No doubt, Cattell was further stimulated by this visit, and when he returned to this country he took up, first at Pennsylvania and later at Columbia, extensive researches into individual differences. The first results of these were published in 1896 (cf.: ref. 8 above).

In the meantime a number of studies had been undertaken, both by Cattell's own students and by others. Among the significant names are: Boas, in 1891, who studied the school children of Worcester, making use of independent estimates of the children by teachers; Bolton, in 1892, who used some of Boas' data; an important and extensive study of Gilbert's on the mental and physical development of school children, in 1893-4; Jastrow's study on association of ideas in 1891; Shaw in 1896; Griffing in 1896; Macdonald's report on experimental study of children in the commissioner of education report for 1898; Titchener and Sharp in 1899, which experimental results seem to be Titchener's *obiter dictum* on individual psychology. (His unsatisfactory results apparently convinced him that the true experimentalist must remain nearer home with sensations, images and simple feelings.) By 1900 the idea of individual differences and its importance in school and in society was pretty generally realized. There followed a series of important papers by Kirkpatrick (1900), Bagley (1901), Seashore (1901), Thompson (1903), Thorn-

[84]Cf.: footnote No. 8 above.

[85]The 1887 paper: "Experiments on the Association of Ideas," *Mind*, v. 12: 68-74. The 1889 paper: "Mental Association Investigated by Experiment," *Mind*, v. 14: 230-250. The 1890 paper is found in *Mind*, v. 15: 373-380. Miss Bryant's earlier work is reported in *J. of Anth. Institute of Gr. Britain and Ireland*, 1886. In the 1889 paper the authors recognize the differences in associative speed for various classes and possibly sub-races (materials being drawn from German, English and Irish schools).

dike's study of twins in 1903, Terman's study of stupidity and genius in 1906. The statistical treatment of test materials began to get systematic orientation in important papers, by Wissler in 1901, by Boas in 1906 and by Thorndike in 1907. Thorndike took up the cudgels against the extreme view of Spearman in regard to the general factor, holding that rather we should think of a large number of units of mental activities which are held together by bonds formed in experience. Later, Thorndike modified this to some extent, although he has not yet come to the view of a general common factor.[86]

Boas, following a hint by Galton's that "sets of measures should be compared with an independent estimate of the man's powers,"[87] seems to have been the first to make application of the idea in collecting data on the school children of Worcester. We have seen that Bourdon, however, made somewhat similar use of outside estimates. This use of an "outside criterion" with which to compare the mental test results is now part and parcel of our technique. It has been greatly elaborated and refined, but the essential notion

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[86]For fuller bibliography see Whipple's "Manual," Boardman, and Mitchell and Ruger. The following are the most important contributions: Boas and Wissler: "Statistics of Growth," *Govt. Print. Office*, 1905. Boas never used all his data and Bolton completed his work in his "The Growth of Memory in School Children," *A. J. Psych.*, 1892: v. 3: 362-380. Gilbert's "Researches on the Mental and Physical Development of School Children" is in *Yale Psychol. Lab. Studies*, 1894: v. 2: 40-100. Jastrow, "A Statistical Study of Memory and Association," *Educ. Rev.*, 1891: v. 2: 442-452. Shaw, "A Test of Memory in School Children," *Ped. Sem.*, 1896: v. 4: 61-78. Griffing, "Sensations from Pressure and Impact," *A. J. Psych.*, 1896: v. 7: 227-236. Titchener & Sharp, "Individual Psychology," *ibid.*, 1899: v. 10: 329-391. Kirkpatrick, "Individual Tests of School Children," *Psych. Rev.*, 1900: v. 7: 274-280. Bagley, "On Correlation of Mental and Motor Ability in School Children," *A. J. Psych.*, 1901: v. 12: 193-205. Seashore, "Suggestions for Tests on School Children," *Ed. Rev.*, 1901: v. 22: 69-82.

Thompson's monograph, "Mental Traits of Sex," Chicago, 1903 was an important beginning of more detailed studies of individual differences in sex. Thorndike's "The Resemblance of Twins," etc., *Col. Contrib. to Phil. & Psych.*, v. 13: no. 3 led off in another possible direction.

Wissler's monograph, "Correlation of Mental and Physical Tests," *Psych. Rev. Mon.*, 1901: v. 3: no. 6 was the first thorough-going attempt to use correlation methods in this type of data. Boas' "The Measurement of Variable Quantities," *Col. Contrib.* etc., v. 14: no. 2 was an important theoretical contribution to statistics, while Thorndike's paper of the next year was simpler and more practical for the average worker. Cf.: "Empirical Studies in the Theory of Measurement," *ibid.*, v. 15: no. 3. On Thorndike vs. Spearman, cf.: the former's "Educational Psychology," v. 3: 363ff. and references. See also, Woodrow, "Brightness and Dullness in Children," Philadelphia, 1919: pp. 213-214.

[87]In footnote (a) to Cattell's article in *Mind*, 1890. See ref. 85.

remains as it was in the early nineties. So, too, the idea of standardization was early recognized.

Thus the stage was all set in this country for the introduction of the test-scale idea in the work of Binet. Up to 1909, therefore, the testing movement had concerned itself with a series of individual tests, and the person's reactions *in toto* could only be expressed by elaborating the results of a number of separate tests made upon him.[88]

It was Goddard who first introduced the Binet tests into this country, although others apparently knew of Binet's work before he did. In September, 1906, he went to the Vineland Training School to conduct research work with the feebleminded. Getting little help from the experimentalists the country over, to whom he wrote for advice, he turned to the experimental literature itself and got together twenty-five tests or "stunts" which he thought might assist him in his diagnosis of mental defect. He did a good deal of work on the standardization of these tests; among them being a modified Mosso ergograph, an automatograph and a modification of Seguin's form board.

Goddard was not aware of Binet's earlier work at this time. In 1908, during a trip abroad, Goddard came in contact with Decroly who told him of Binet and gave him a copy of the Binet tests for 1905. Goddard apparently did not see Binet personally, but attempted the use of the 1905 scale in a minor way upon his return to Vineland. He did not think it contributed much over and above what he obtained by the use of his own series of separate tests. In 1909, the *L'Annee Psychologique* for 1908, containing the 1908 revision, reached him. He writes of this:

> "When I read Binet's "Measuring Scale," I rejected it as too formal and exact. I thought "mind" could not be measured in that way. A second thought showed me that my impression or feeling was of no value compared to the serious declaration of a man like Binet. I accordingly set about trying out the scale on our children. The more I used it the more amazed I was at its accuracy."[89]

Goddard began publishing results of his findings with the test in 1910. In 1911 he published his revision of the 1908

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[88]Cf.: Whitley, "Empirical Study of Certain Tests for Individual Differences," *Col. Contrib. to Phil. & Psych.*, v. 20: no. 1 (1911) for a critical review and treatment of the mass of individual tests extant about 1910. Whipple's "Manual" first published in 1910 served the valuable purpose of bringing together the immense mass of material on various tests.

[89]From correspondence with Dr. Goddard, Aug. 17, 1923.

scale.[90] In 1914 Goddard published a volume on the feeble-minded which gave in large part the result of his first seven years at Vineland. In 1919 he published his "Psychology of the Normal and Subnormal" which is an attempt to correlate the materials of his special field with systematic psychology. Under his direction, moreover, Miss Kite's translations of Binet's important papers on tests were published.

In 1909 a committee of the National Education Association drew up a report bearing on tests for special class children.[91] This contained both Goddard's revision of the 1908 scale and De Sanctis' scale. For these persons the tests were still thought of as chiefly applicable to the subnormal or exceptional child.

Among the stricter educational people, Huey was perhaps the first to take account of the work of Binet. In 1910 he presented a translation of the 1908 scale in the newly founded *Journal of Educational Psychology* for that year. In the same year he published a paper in which he suggested that the scale might profitably be used for determining the amount of retardation in pupils who were above the level of feeble-mindedness.[92]

In 1911 Ayres' critical paper on the Binet tests raised a storm of protest from the clinical psychologists on the one hand while among the stricter psychologists, the sociologists, and the more conservative educational personnel there was a feeling that his criticism was largely just and deserved.[93] His chief objections are still being made that the test emphasizes verbal fluency, is really scholastic, rather than otherwise, in nature and that it cannot be said to test native ability.

Other prominent workers with the Binet scale in this first period were Kuhlmann who published a revision of the 1908

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[90]Cf.: Kohs' bibliography for complete references on Goddard and other early workers with tests. The bibliography on the Binet-Simon tests is too voluminous and moreover sufficiently accessible to all to warrant not mentioning more than the most important papers from this point on. Cf. also: Mitchell and Ruger's bibliography and the reviews of the literature each year in the *Psychological Bulletin*, and titles published in the *Psychological Index*.

[91]Bruner, Barnes, Dearborn, "Rept. of Comm. on Books and Tests Pertaining to the Study of Exceptional and Mentally Deficient Children," *Proc. N. E. A.*, Denver, 1909: v. 47: 901-14.

[92]"Retardation and the Mental Examination of Retarded Children," *J. of Psycho-Asthen.*, 1910: v. 15: 31-43.

[93]"The Binet-Simon Measuring Scale for Intelligence: Some Criticisms and Suggestions," *Psych. Clinic*, 1911: v. 5: 187-196. Cf.: Kuhlmann, "A Reply to Dr. L. P. Ayres' Criticism, etc.," *J. Psycho-Asthen.*, 1911: v. 16: 58-67.

series in 1911, Whipple who made a translation in 1910, and Miss Town who first translated the 1911 scale.[94]

Kuhlmann's work at Faribault, Minnesota, has been extremely well done, and although his work is less known than Goddard's or Terman's it is probably more critical. Kuhlmann has at no time let his interest in the statistical treatment of his data blind him to the important qualitative side of the testing.[95]

In 1911 also appeared Wallin's paper on the need of great caution in the conduct of the test.[96] Throughout the past twelve years, Wallin's criticisms of the Binet scale have been constant. While he has defended its use and has himself made extensive studies with it, he has at all times insisted upon the need of extreme care in interpreting the results from the same.

Where Goddard and Kuhlmann made the test known to the clinical psychologists, Terman has made it a common term in every school system in the country. Terman's first contribution was his doctorate thesis, "Genius and Stupidity," in 1906. In the preparation of this study Terman has come upon the work of Binet on suggestion and his book upon his two daughters. Although acquainted with the 1905 work of Binet as early as 1907, Terman did not turn his attention to the tests until he went to Stanford University in 1910.

Terman's contact with Huey, especially in 1906 and again in 1910, was a great stimulus to his work on mental endowment. Terman began working toward a revision of Binet and his first tentative revision was published early in 1912.[97] During this entire period Terman was drawing heavily upon the work of Meumann[98] and throughout the formative period of his work, Terman was almost as indebted to Meumann as to Binet.

In 1915 the present widely used Stanford Revision of the Binet-Simon scale was completed. And in 1916 Terman

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[94]Cf.: Kohs' bibliography for list of several papers by Kuhlmann and Town.

[95]Cf.: "The Results of Repeated Mental Re-examinations of 639 Feebleminded over a Period of Ten Years," *J. Appl. Psych.*, 1921: v. 5: 195-224, for the most careful re-survey of test results at hand in this country.

[96]"A Practical Guide for the Administration of the Binet-Simon Scale for Measuring Intelligence," *Psych. Clinic*, 1911-12: v. 5: 217-238.

[97]Terman & Childs, "A Tentative Revision and Extension of the Binet-Simon Measuring Scale of Intelligence," *J. Educ. Psych.*, 1912: v. 3: 61-74.

[98]Cf.: *J. of Psycho-Asthen.*, 1914: v. 19: 75-94; 123-134; 187-199 for a review of Meumann's materials on endowment from the latter's "Vorlesungen," v. 2.

published his handbook, "The Measurement of Intelligence," which brought the materials to the general notice of the educational public. Terman, taking his cue from Stern's notion of mental quotient, conceived of the ratio between mental and chronological ages as conveniently expressed by the phrase, Intelligence Quotient. This idea also soon became very popular and the I. Q. is as well-known today in the psychology of testing as was Herbart's doctrine of apperception once well-known in education.

Terman's principle emphasis has been the applicability of the Binet scale to the normal school-room population and to industry and social life at large for determination of general intelligence. Due to his early contact with the work of Galton and his own studies on genius and stupidity he has, on the whole, held to the standpoint which stresses the great importance of heredity rather than environment in the make-up of intelligence.[99]

The work of Galton on heredity and genius had been followed in this country by that of Woods. Goddard's results on the feebleminded seemed to dove-tail with the general notion of inheritability of mental capacity. Studies by Jastrow, Thorndike and others on college students likewise led to similar notions. In 1911 C. B. Davenport added the impetus of his particular eugenics study to the notion of the inheritance of mental defect.[100] All in all, there was a growing tendency on the part of many of the workers in the field of mental deficiency and also in the field of school problems to feel that at last we had a measuring rod which would plumb the innate potentialities of children and thus throw great light on matters of education and social reform.

Among the criticisms made of the Binet scale was that it did not sufficiently take into account the partially correct responses of the subject, for instance, a child who had three trials at a particular task was given no credit whatsoever unless he passed two out of the three tests demanded of him. Huey was the first to conceive of a "point" scale which would give the child credit for his successes at all times, but it was Yerkes who made the most complete re-organization of the

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[99]Cf.: Kohs' bibliography for early papers of Terman, and Mitchell & Ruger's bibliography for the later publications. In 1919 Terman published his "Intelligence of School Children" largely given over to popular presentation of the work of his students on the application of the Binet to school populations.

[100]"Heredity in Relation to Eugenics," New York, 1911: esp. pp. 65ff. Cf.: Heron, D.: "A Criticism of Recent American Work" in *Mendelism and the Problem of Mental Defect:* 1913, v. 1.

scale with this idea in mind.[101] On the whole, however, the point scale has never been as universally used as has the Stanford-Binet, which in seven years has become virtually the standard form of the Binet test in this country.

Summarizing the important trends in mental testing in this country up to 1916-17, we note, first, the large contribution which Cattell and his students had made both in the elaboration of statistical procedures and in the application and evaluation of the tests in many directions. There was, however, in this group no attempt to synthesize the separate tests into a scale or battery standardized all together. It was the work of Binet introduced by Goddard for clinical purposes but taken into the schoolroom by Terman which gave us this notion. Thus we have on the one hand a body of valuable material in the way of separate tests, many of them standardized, accompanied with rather refined statistical methods. On the other hand, we have a scale designed really for clinical purposes, with its partial statistical standardization and expressing its results in mental ages and intelligence quotients. The first had implicit in it the *score* idea, a numerical expression of results from several individual tests added together. The second although bearing an ear-mark of a statistical treatment was still thought of as diagnostic in the clinical sense. *Mental age* was after all a qualitative concept rather than quantitative. The notion of *intelligence quotient*, however, took a step decidedly toward the quantitative expression of the individual's performance with the scale.

The present tendencies in testing may be conveniently thought of as those evident since 1917. In this year, came a more extensive application of psychological tests to masses of persons than had ever been imagined possible. When the United States government, listening to the suggestions of a committee of psychologists and other scientists, concerning the use to be made of known methods of studying individuals with a view to general capacity and vocational fitness, consented to a series of experiments upon drafted men with intelligence tests, the psychology of mental testing got the

[101]Cf.: Huey, "A Point Scale of Tests for Intelligence," Baltimore (Warwick & York), pp. 4 (no date). Yerkes' scale had the collaboration of Bridges and Hardwick, and was published under the title, "A Point Scale for Measuring Mental Ability," 1915. Cf.: Otis, "A Criticism of the Yerkes-Bridges Point Scale, etc.," *J. Educ. Psych.*, 1917: v. 8: 129-150 and Freeman, "A Critique of the Yerkes-Bridges-Hardwick Comparisons of the Binet-Simon and Point Scales," *Psych. Rev.*, 1917: v. 24: 484-490 for pertinent literature on the controversy over the merits of the two scales. Cf.: Mitchell and Ruger's bibliography for the papers by Yerkes and his collaborators in the same discussion.

greatest impetus in its history. To imagine what the movement might have meant without this almost colossal application, is futile. The fact is that the government was sufficiently impressed by preliminary trials to put through a universal plan of psychological examining for almost the entire draft army.

In the early months of 1917, Otis, who had worked with Terman at Stanford, had practically completed a scheme for testing persons in groups with an intelligence scale made up of materials from older well-recognized individual tests but modified in large part to make possible presentation and performance under group conditions. These modifications consisted in devising "the method of alternative answers," and pencil and paper methods of dealing with true-false materials, vocabulary tests, etc. When the committee made up of Yerkes, Terman, Goddard, Whipple and others came to consider ways and means of applying tests to soldiers, Otis' novel plan was taken as the only possible method of dealing with large numbers of men about whom the army officials wanted information concerning mental efficiency.[102]

The army group-tests, alpha and beta, are now universally known. From them a large number of other tests have been devised or modifications of these same tests made to fit school and business conditions. Among these tests are the National Intelligence Scale, the Haggerty Intelligence Examination and Mentimeter.

In the standardization of the group tests, alpha and beta, recourse was had to the method of giving individual Stanford-Binet tests to something over 650 unselected men who were also given the two group tests. In this way the scores in the group tests might be compared directly with the mental ages and intelligence quotients of the men. These comparative data were then used as universal for the purposes of classification throughout the entire army testing service. Results elsewhere tended, on the whole, to confirm the classifications set for various scores in terms of mental ages and I. Q. by this first examination.

Thus, in this way the two divergent trends in testing were brought together. Individual tests were combined into a

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[102]Cf.: *Nat'l Acad. of Science:* Memoirs: v. 15: entitled "Psychological Examining in the United States Army," p. 299 for mention of credit due Otis and his group-testing idea. Cf.: ref. 25 above on Lobsien's use, in 1914, of the group-testing idea. Apparently Otis arrived at his idea independently. It is more likely that Otis was influenced by the work in group educational tests.

battery of tests, called a scale, these were standardized by statistical procedure and, moreover, were given to the same individuals who had had the Binet tests and in this manner cross reference could be made from score to mental age or I. Q. Since this work was done, there has been a number of attempts to refine the statistical method of dealing with transmutation of scores from one scale to another, and from the group scales to individual Binet scales.[103]

Soon after the introduction of the Binet scale into this country, there were a number of people who became more or less convinced that the scale, whether testing innate capacity or something else, was too largely linguistic in nature. This emphasis upon language was felt to be a handicap in testing foreign-born children or children of foreign-born parents, or in testing those who lacked educational opportunities to acquire ready proficiency in the English tongue. Knox devised a test of the performance kind for work with low-grade immigrants.[104]

Healy, even earlier, had made extensive use of form board and other performance tests.[105] Pintner and Paterson, working with the deaf, found the Binet scale impractical. They began using the Healy picture completion and other performance tests; their work was extended to normal children, and in 1917, they published an important book upon performance tests with a collection of these tests and many norms for using them.[106] Pintner has more recently devised a series of "Non-Language Mental Tests" which may be used on groups. His latest test of this sort is devised for use with kindergarten children. There are a number of group tests now which contain performance material with a range from the infant to the adult. The usual criticism made against the performance test is that it does not touch the higher mental processes as thoroughly as do those tests which involve

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[103]Cf.: McCall, "How to Measure in Education," New York, 1922. Also, Otis, "The Method of Finding the Correspondence Between Scores in Two Tests," *J. Educ. Psych.*, 1922: v. 13: 529-545.

[104]"Alien Mental Defectives": Chicago (Stoelting) no date. This contains his own and other tests used on immigrants. Cf.: "A Scale Based on the Work at Ellis Island, for Estimating Mental Defect," *J. Amer. Med. Ass'n.*, 1914: v. 62: 741-747 for report of first work done.

[105]Healy & Fernald, "Tests for Practical Mental Classification," *Psych. Rev. Mon.*, 1911: v. 13: no. 54. In 1914 Healy brought out his picture completion test. Cf.: *Psych. Rev.*, 1914: v. 21: 189-203.

[106]*Op. cit.* ref. "A Scale of Performance Tests," New York, 1917. The first chapter contains valuable historical material and a bibliography.

language.[107] In an attempt to overcome this difficulty Kohs has recently published a performance test which the author claims will involve the higher processes.[108]

The work of Porteus should be mentioned as contributing in no small measure to the development of performance tests. In 1914 he presented a paper before the British Association for the Advancement of Science dealing with his maze tests. In 1915 he published papers on the same in American and English periodicals.[109] His maze-test idea has been expanded and made a part of a number of group scales, notably, however, the army beta. Recent performance tests have been proposed by Ferguson[110] in an attempt to measure more adequately the intelligence of the colored races who may suffer a language handicap.

The entire movement of mental testing has now such a wide scope and the material is becoming so enormous that it would tax a single person's time and energy to attempt to cover the literature today. The present tendencies may be mentioned briefly.

Statistical treatment has continued to be refined and enlarged, the general assumption of the validity of the method of Quetelet has brought extensive use of the normal curve with it. Kelley and Otis perhaps have been foremost in the elaboration of statistical technique.[111]

Following the statistical lead, a number of studies have been made on immigrant children, negroes, college students and the elementary and high school populations for the determination of averages, dispersions and correlations. These studies have usually been used only to show general

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[107]Cf.: Stockton, "The Definition of Intelligence in Relation to Modern Methods of Mental Measurement," *Psych. Rev. Mon.*, 1921: v. 30: no.137, for a review of the standpoint of two levels of intellectual performance and a theory of two-level intelligence.

[108]"Intelligence Measurement," New York, 1922.

[109]"Mental Tests for Defectives," *J. Psycho-Asthen.*, 1915: v.19: 200-213; "Motor-Intellectual Tests for Mental Defectives," *J. Exp. Ped.*, 1915-16: v. 3: 127-135.

[110]"A Series of Form Boards," *J. Exp. Psych.*, 1920: v. 3: 47-58.

[111]Cf.: Otis, "Some Logical Aspects of the Binet-Simon Scale," *Psych. Rev.*, 1916: v. 23: 129-152 and 165-179. This paper showed the lack of careful statistical technique in the standardization of the Binet scale by Terman in 1911-15. Kelley's thesis, "Educational Guidance," *Teachers College Contr. to Educ.*, 1914: no. 71, made extensive use of the Gaussian normal curve and in his "Further Logical Aspects of the Binet Scale," *Psych. Rev.*, 1916: v. 23: 407-11 and "Measurement of Overlapping," *J. Educ. Psych.*, 1919: v. 10: 458ff. he has developed the use of the normal curve in education and psychology still further. His recent "Statistical Method," New York, 1923 contains additional materials.

trends, although segregation of pupils has been resorted to on the basis of group tests.[112]

Rather opposed to the statistical treatment of test data is the standpoint which looks upon the tests as an aid to the diagnosis of the individual child, normal, subnormal or supernormal. From this point of view the I. Q. is not particularly diagnostic in view of a number of other complicating factors: emotional sets, psycho-pathic trends, physical conditions, what not. I. Q. and mental age are themselves nothing but scores. The aim here is the individual clinical picture, something in the nature of the clinical picture in medicine. The emphasis is upon the individual, and there is no attempt to substitute for him and his fellows a new type of psychologic man or machine under a measure of central tendency with an accompanying probable error.[113]

In the latter usage of tests we find the attention put upon the defectives, the delinquents, and the subnormal or supernormal as case studies. In the former, on the other hand, the individual is lost sight of in the mass trends. The possibility of uniting these divergent views ought to be welcomed with interest.

VI

Summary and the Next Step

In concluding our sketch of this movement let us bring together some of its more important features and attempt a characterization of its problem today.

The existence of individual differences has long been known. Even before Bessel (1822), scientists recognized what came to be known as the "personal equation" in observations. Multiple readings, with an attempt to cancel these out in averages, and improvement of instruments tended to minimize these errors. It was early recognized, moreover, that these errors of observation depended upon reaction times.

With the coming of psychology, proper, reaction times became the important object of study, but in the Wundtian school the individual differences in these were wiped out in

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[112]For bibliography on racial differences see, Young, "Mental Differences in Certain Immigrant Groups," *Univ. of Oregon Publ.*, 1922: v. 1: no. 11, pp. 99ff. For tests consult, "Bibliography of Tests for Use in Schools," compiled by World Book Co., 1922. For current papers and reviews, cf.: *Psychological Index, Psychological Bulletin, J. of Educ. Psychology, J. of Educ. Research,* and the usual periodical indexes.

[113]Cf.: Root, "The Intelligence Quotient from Two Viewpoints." *J. App. Psy.*, 1922: v. 6: 267-275.

averages or completely ignored in an effort to get at universal generalizations about the elemental contents of consciousness in analogy with the study of atoms and forces in chemistry and physics. Introspection in the form of verbal report was simply an aid to the arrival at more adequate statement of these laws. If the individual was thought of at all by the Wundtians, it was in the analogy of the "economic man" of classical political economy, a psychologic man or automaton, built up, in additive fashion, from the elements and attributes of consciousness.

This conception of psychology as a refined physiology proved inadequate to answer some of the most pressing problems of society in reference to human nature. Galton, and soon afterward Cattell, and still later Binet and others in France, began working at the study of traits and reaction times with a view to noting just the features that the older, experimental psychology was ignoring. They believed that we could arrive at laws of individual behavior just as valid and significant as uniform laws of consciousness for man conceived as a generic, huge congeries of atoms of conscious elements. The emphasis which French psychology put upon the total-going personality in its studies of imagery, suggestion, hypnotism, abnormal behavior, etc., supported this general notion of individual differences. It was this newer approach to human nature through the study of traits and by examining the individual reactions to certain tests and problems that was to eventuate in the movement for intelligence measurement.

We saw that this movement, however, had four roots: the German which furnished rigid training to many of the early leaders, and a large percentage of the individual tests which were first used in the laboratory there; the French which gave the notion of studying the higher thought processes in relation to intelligence and which in the case of Binet led to the notion of intelligence as some general capacity; the English which under the stimulation of Galton and Pearson contributed a refined method of dealing with the mass data accumulated by the study of traits and tests; and the American which extended the application and statistical treatment of tests and brought the intelligence scales into common usage.

There are two assumptions then at hand, first that intelligence is definable and secondly that it may be measured. The definitions of intelligence, however, tended at first to be qualitative. Comprehension, judgment and reasoning were terms used by Binet. Stern put his definition in more general terms of capacity to adjust to new situations, and so on to

others almost *ad infinitum*. The tendency to so continue this type of definition is seen in the symposium on intelligence testing in the 1921 *Journal of Educational Psychology*. Although the leaders of the movement in this country contributed there was practically no uniformity. Today on the qualitative side many argue with Bertrand Russell that "Everybody . . . is much more agreed as to who is intelligent than as to what constitutes intelligence."[114] Some have thought that one can not say very much more than to speak of "intelligence as the tests test it." This latter definition is grantedly too vague to have scientific meaning, although it may serve for technological purposes.

Failing to agree either on the definition of intelligence or to find adequate experimental methods for examining it, recourse has been had to the statistical method of dealing with it. Failing on the qualitative side we have resorted to the statistical. It is the old conflict between quality and statistical quantities. The French psychologists have tended on the whole to study the individual's reactions with a view to understanding the total adjustment of the organism or personality. The English and Americans, in large part, have concerned themselves with expressing the reactions in statistical terms: averages, measures of dispersion and correlations. Moreover, those who view intelligence testing merely as an aid to clinical diagnosis tend toward the older view, the French, while those who deal in mass materials would emphasize the latter and tend to define intelligence in statistical formulae.

For the one group the differences in intellect and capacity in the periods of growth are concealed in terms of various sorts of quotients, to the other group there are actually qualitative differences. Now contrary to the popular notion Binet was really in sympathy with this second view. Note his criticism of Blin's score method and the fact that the mere quantity did not inform one of the growth in the child of power to judge and to reason. For Binet, mental age was a convenient way of expressing, on the average, just the qualitative differences say between a child of twelve and one of six years. It is the use of I. Qs. and such statistical ratios that have blinded us to this fact.[115]

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[114]"What Constitutes Intelligence?" *Nation* (London), 1923: v. 33: 330.

[115]What neurological or other evidence is there for Franzen's saying that intelligence means "that quality of the nervous system which distinguishes bright from stupid," that "it is a characteristic of the nervous system irrespective of growth"? He says further, "Thus we may think of the timbre of the nervous system, its chemistry, as intelligence, and the amount

Coming to the notion of general intelligence as expressed in terms of *g*, *c* or other algebraic abbreviation, we must take into account the mass of data which points to great individual differences in specific capacities. In much of the world's practical use too, as Link points out, what we want to know is not what the "general" capacity is, but what the individual can do in a given concrete set of situations. Furthermore, the notion of inheritability of this general factor, must meet the criticism of the anthropologists, sociologists and many psychologists who hold that we cannot talk of intelligence as a thing apart from the cultural mileau in which we find man. As John Adams has recently put it, "We cannot think *in vacuo*."[116]

Nevertheless Kelley and others are engaged in elaborate statistical methods for getting at mental functions in statistical terms. Ignoring Binet's old caution that intelligence must not be thought of as additive or linear, they have gone ahead to posit two-dimensional or possibly three-dimensional definitions of intelligence. When asked what these statistical definitions mean one is very apt to go into explanations which tend to be mystical, as seen in the recent book by Spearman.[117]

The whole problem is clearly one of aim and method. Failing experimentation upon man's more complex mental life, we have had recourse to statistical analysis. While the latter is not invalid it must not be thought of as final or as a substitute for further investigation and true experimentation. The standpoint of Professor Yule so ably expresses this idea that we quote him at some length.

> Statistical methods . . . should be regarded as ancillary, not essential. They are essential where the subject of investiga-

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of it as its growth. A child of ten has the same intelligence as he had at three, though he has attained greater mental growth by that time." This neurologizing, this talking of the "amount" of "chemistry" in the nervous system as a criterion of the growth of intelligence, is open to the obvious criticisms which such loose analogy-thinking and such crude metaphysical explanations always are. Franzen represents the extreme use of the statistical method in dealing with intelligence test problems and a growing tendency to statistize our rough findings into accuracy of quotients, standard deviations and partial correlations. Cf.: Terman, Dickson, Sutherland, Franzen, *et al.*, "Intelligence Tests and School Reorganization," Yonkers, 1923, chap. 4 and other writings of Franzen for this development.

[116]"Educational Implications of the I. Q.," *Australasian J. of Psych. & Phil.*, 1923: v. 1: 184. See this entire article for a critical but sympathetic standpoint.

[117]Cf.: brief report of Kelley's paper before the American Psychological Association in Dec. 1922: *Psych. Bull.*, 1923: v. 20: 91-2. For Spearman see above. Few mental testers realize the logical outcome of their assumptions about *general intelligence* and like notions.

> tion is itself an aggregate, as a swarm of atoms, or a crowd. But here the subject is the individual. . . . This being the case, statistical methods are only necessary in so far as experiment fails to attain its ideal, the ideal of only permitting one causal circumstance to vary at a time. And it should always be the aim of the experimenter not to revel in statistical methods . . . but steadily to diminish, by continual improvement of his experimental methods the necessity for their use and the influence they have on his conclusions. Statistical methods are not only ancillary; they are, to the experimenter, a warning of failure.[118]

The grip which apparent exactitude in numbers has upon us ought not to need mention to psychologists. One of the strong appeals to educational and psychological workers using tests, however, is undoubtedly the fact that an array of averages and correlations gives them a sense of definiteness and finality, which a careful analysis reveals as fictitious. Is not the present trend toward increased complexity of statistical treatment an admission, as Yule says, of our failure in the more subtle fields of experimentation?

Viewed from still another angle the accusation that this applied psychology of testing is technology, not science, has never been answered. Certainly if we view careful observation, description and experimentation as the basis of scientific method, further if we take the view of extended time in arriving at generalizations, then most of the work on mental testing is technological and not strictly speaking scientific. At best the results of testing in the school, in business and in industry serve to show us, as Yule says, the complicated problems that still lie unsolved before us. It is the firm belief of the writer that we shall not advance over our present chaos in this matter until two conditions are fulfilled. First, we require careful experimental work on learning, taking into account *Aufgaben*, mental sets, emotional attitudes and especially the different types of material to be learned. In the second place, we need careful observation and description of the environmental factors which play upon the individual in the home, in the neighborhood and on the playground, as well as in the schoolroom, with a view to understanding more fully the subtle influence of the early conditioned responses and attitudes here built up. In short, we need some fundamental work to test the point of view of Levy-Bruhl, Boas, Thomas and other sociologists that by very nature mental reactions are socially determined in large measure.

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[118] "Critical Notice of Brown and Thomson's, 'Essentials of Mental Measurement'," 1921, *Br. J. Psych.*, 1921: v. 12: 105-6. The entire article is, aside from Boring's (cf.: *supra*), the only significant criticism recently offered on the statistical treatment of psychological data.

When these two approaches, the psychological and the sociological are in turn tied up with the biological researches into the problem of heredity and acquired characteristics, we shall be on the road to a scientific body of material upon the matter of individual differences.

In conclusion we may add further that the present tendency for statistical and quantitative classification is part and parcel of the general trend toward mechanization and standardization of life, consequent upon the application of science to human endeavor, in industry, in education, in the military. It is an inevitable effect of a materialistic civilization. In this mad rush for mass production, be it in the classroom product or in business enterprise, the trend is ever and anon toward those values which are expressible in quantitative units. We are rapidly losing our older notions of quality, of calm and divergently integrated personalities. If the older laboratory psychology produced a psychologic man which had no individuality, the present statistical treatment of him in terms of I. Q. and score, buttressed by averages of correlation quotients, tends to make man a psychological robot with no emotion, no quality, no personality.

The question as to the future of mental measurement is bound up with the future of the cultural interest of western peoples in quantity production, in standardization of life. As there are signs of revolt and alteration of this standpoint in the world at large, so, too, there are indications among psychologists themselves of a deeper appreciation of the emotional characteristics of the person, of the importance of attitudes and sets, socially determined, of the play of opportunity and general run of attention upon one's adjustment to life and his consequent social usefulness. The growing importance of mental hygiene is correcting the extremes of those who would run merely to statistical concepts. The study of gifted children, such as Terman is now undertaking, ought to lead to a much deeper understanding of these other factors.

It is the belief of the writer that we shall soon see a viewpoint taken in psychology which will emphasize with renewed vigor the unity of the organism as the basis of our study. We shall, hereafter, concern ourselves with the investigation of personality, with the individual as a more or less integrated whole in which intelligence, instinctive trends, emotional pre-dispositions and physique play important parts, but none of which may properly be studied without making a place for the others.

PREVENTION OF THE MISFITS

By Margaret S. McGill

During the "World War," a young Greek was examined in one of the United States' army camps by some Y. M. C. A. secretaries, who were helping the officers to classify the recruits according to their mental attainments. The tall, handsome youth had been placed in the lowest class, much to his disgust, because he was unable to understand the simplest questions and commands in English.

"He can't even tell me his right name," complained one of the examiners. "All I can get out of him is 'Tom Jim' and that seems to be his entire vocabulary."

"That surely isn't his real name," said one of the other Y men. "Let me have a try at him," and he stepped briskly up to the unhappy recruit, handed him his pencil and a leaf from his notebook and finally succeeded in making him understand that he must write his name.

With a hopeless gesture the Greek wrote laboriously in Greek letters, "Demetrius Pantezopoulos," and was surprised and delighted when the secretary pronounced the name correctly. He remarked, laughingly, to the other examiners, that it was the first time since he graduated from college that he had made any practical use of his Greek.

When Demetrius came to America to find employment, some impatient employer, who had been unable to read the Greek name, had flung "Tom Jim" at him as a substitute. Demetrius had accepted the strange appellation meekly as it seemed to satisfy his associates. But the army officers were not so easily satisfied and insisted upon having his own name, and the young man had become utterly discouraged by his failure to make them understand it. Now, thanks to the wise Y secretary, he could claim his rightful name once more and have it properly inscribed on his identification disk.

The Greek was only one among hundreds of foreigners who were unable to understand and speak English when they entered the army. Classes were formed at once, for the purpose of teaching these foreign recruits sufficient English to enable them to understand the necessary questions and commands. Many of these men had been residents in our

large cities where there are great settlements of foreigners, and where each nationality forms a little separate colony of its own. The people in these colonies cling to their national customs and speak their own language. The newspapers and books that they read are printed in their own language, and they have their special churches and theatres, where they hear only their own language. The majority of these men and women know very little about the life outside of their district. Some of the political bosses have found it expedient to encourage this ignorance of civic conditions.

The immigrants came to the United States expecting to gain opportunities that they had been denied in their own countries. They had dreamed of a great, hospitable nation which stood for co-operation and equality, and so they came to the American Republic with the hope of having their dreams realized. But, sometimes, they were disappointed, because there were Americans who failed to exemplify Republican principles, and who appeared too busy, or too indifferent, to notice the aliens who crowded the back streets of their cities.

These conditions have been changed, somewhat, by the war. The army has been a great factor in the Americanization of the foreign element in our country. It has been an excellent school for the aliens, who needed education as well as a patriotic spirit. The "army-school" trained these men, many of whom were becoming physical and mental derelicts, to be strong and reliable citizens. They were taught English by the "Direct Method" and they learned, at first, only the language that was required in their everyday life. Time was not wasted in teaching subjects that would be of no immediate advantage to them. The individual was trained for his particular task; consequently there were no misfits in the army. The great army-school has demonstrated to the whole country the value of direct, practical methods in training foreigners for citizenship. It would be a serious mistake for the Government to allow this educational work, which the army has begun, to be lost. Americans must not return to their pre-war indifference to the alien population. A large number of these people have proved their worth to the country of their adoption and they must not be permitted to settle back into their old, foreign habits. They must remain good citizens, and we must have closer relationships with them in the future. We should not be separated again by different customs and languages.

The new interest in the foreigners, which has been aroused by the army, and, also, by the patriotic service rendered by

the women and children of all nationalities in our country during the war, has led the Government to realize its obligations to these people. This recent concern regarding Americanization of the aliens has resulted in the reconstruction of the evening schools. Teachers are now receiving courses of instruction, provided by the Government, to prepare them for the special work of training the immigrants for citizenship. In the future, probably, all adult foreigners will receive more practical instruction in our schools. This educational field, however, is a discouraging one, because it is difficult for the adult who has an untrained mind, to learn a new language, and the workers are too tired at the end of the day to acquire habits of study. Consequently, we shall have to depend largely upon the children of aliens to Americanize the foreign districts of our cities. Through the influence of their children, many aliens have become good citizens. In these homes, as in every home the world over, the child leads.

This fact was demonstrated by a little Italian girl, who lived in an Italian settlement in New York City, and attended a public school. The father of the child called to see the teacher one day. Although his English was limited, he succeeded in making the teacher understand how much he appreciated his daughter's progress in the school. He said that the entire family, from the youngest to the oldest, was obliged to learn the lessons that the child had been taught. The stout Italian explained that she had even led them through the folk-dances she knew, and he had, evidently, found that part of the program somewhat trying. The lessons in hygiene that the child had gained through her daily experiences in the school, had also been impressed upon the family. Since the war they had been required to salute the flag and to sing patriotic songs.

The public schools should be the agency for the prevention of the misfits in our communities by helping every child to find his right place in American life. We need more practical vocational guidance for the pupils in our schools. The last grade of the public school should be the "clearing-house," where pupils could be advised by their teachers in regard to their future vocations. Their knowledge of a pupil's ability would be of greater value, perhaps, in helping him to choose his life work, than psychological tests, or the advice of a vocational guidance committee, which is apt to depend upon inadequate reports in determining the fate of a "case." There should be deliberate and intelligent classification of all the pupils through this public school clearing-house, to prevent them from wasting time in preparing for unsuitable

occupations. Many of the public school children do not enter high school and a large number of high school pupils fail to complete their courses and attend college. The clearing-house would help the teachers and parents to decide whether or not it would be worth while to give a boy or girl higher education.

The history of a pupil's progress through the grades, from the kindergarten to the last year in the public school, if faithfully kept by the teachers, would be valuable when he reached the clearing-house stage. In the beginning of a child's education, he frequently shows a marked predilection for an occupation. This fact may be illustrated by a kindergarten class. The kindergartner discovered that each child chose naturally the work that he liked best and for which he seemed adapted. Mary Murphy, who was always exceedingly slow in her mental processes, delighted in keeping the floor clean and in washing the wall-slates; while Gottlieb would dream of the wonderful pictures he would draw when the period came for art work. John never forgot to water the plants and was the first one to notice the buds as they formed. It was Sophia, who chose teaching as her vocation, and, whenever the teacher left the classroom, she assumed the duties of an instructor and proved a rigid disciplinarian. There was, also, Abraham Cohen, who never lost an opportunity of doing a clever stroke of business and traded his marble for two of Alfred's superior ones. Thus each member of the class expressed his special taste through the kindergarten occupations. Such reports as these should be preserved by the teachers, and passed on with the pupils from grade to grade. The teachers of every grade should add their personal observations to these histories. The records would enable a pupil's advisers to direct him more intelligently toward his true vocation. Then, perhaps, there would be fewer Mary Murphys trained for the teaching profession, and boys like Gottlieb would not be placed in business positions to torment employers with their inattention. John, who loved plants, would not be sent to work at a machine in a factory for the rest of his days, when gardeners and farmers are so badly needed. Many of the boys and girls from the public schools have been defrauded of their right to congenial life employment because they lacked intelligent guidance before they left school.

The boys and girls who have been obliged to leave school before they had completed their courses of study, are frequently forced into uncongenial employment because they were unprepared for better positions. Many of these un-

fortunate ones would have made the best use of higher education and been competent to fill high positions in professional life. Other pupils have had every advantage, but have been persuaded by unwise advisers to prepare for unsuitable professions. They have, perhaps, submitted to the unwise plans for their life work to avoid trouble, but find later that they have a decided distaste for their profession. There would, doubtless, be fewer incompetent teachers, doctors and lawyers, if all of the pupils in our schools could receive unbiased advice at the proper time. Occasionally the pupils who have chosen the wrong preparatory courses have been able to correct their mistakes before it was too late.

This happened in the case of a boy who began to study for the ministry to please an ambitious mother, and who discovered that he was not at all adapted to that calling. He decided to take a course in forestry instead, and he became very successful in that profession. He would have been a failure as a minister and he was thankful that he discovered his mistake before it was too late. Afterward, his kindergarten teacher remembered that the boy had shown unusual interest in nature study when he was in her class. This special interest had been forgotten during his progress through the rest of the grades in the school. Other boys and girls have not been so fortunate as to find out their blunders in choosing their vocation, but have sometimes been rescued before it was too late by wise friends.

A kind-hearted physician became interested in some boys who worked on a farm where he spent his summers. He gave several of these boys who were eager for an education, a chance to earn their way through college and several of them eventually became successful physicians. They have never ceased to be grateful to the good friend who gave them the opportunity to escape from the occupation which they had disliked and enabled them to chose one which they enjoyed. Some of the other boys preferred their agricultural pursuits and became good and contented farmers. But through the friend's influence, each boy was given a fair chance to select his special calling.

Every effort should be made to save our boys and girls from the discouragement which results from uncongenial employment. If pupils must leave school before they have finished their preparation for their life work, they should be encouraged to attend evening-schools, and provision should be made by the public schools for them to continue their preparation. Some of these boys and girls may not be endowed with more than one talent, but each individual should

be taught to invest his particular capital to the best advantage. Justice usually breeds contentment, and contentment insures loyal citizenship. When our Government ceases to herd the immigrants, regardless of their abilities, and more time is given to the study of personal welfare, then each member of society will be trained to use his powers to the best advantage, and his position in life will not be left entirely to chance.

It was by a mere chance that Tony, a young Italian, found his rightful vocation. When Tony arrived in this country, he went to work with a gang of his fellow countrymen, digging sewers. He was physically unfit for the hard work. The contractor who hired him was, fortunately, a humane boss and he realized that the man would soon be worn out with the strain of such labor. He heard of a position on a country estate for an assistant gardener and he advised Tony to apply for it. This work was exactly suited to the Italian and he rejoiced over the change of occupation. His new employer soon discovered that Tony was a genius at gardening and he promoted him later to the position of head-gardener. And so, by an accident, the Italian became a useful and contented citizen.

Girls frequently become misfits because they are unwilling to prepare for their real vocations. To avoid accepting what appears to them a menial position, girls who are really best fitted for domestic work are taking business courses in the high schools. When domestic work is considered as an interesting and progressive science, instead of mere drudgery, it will, undoubtedly, appeal to more girls as a worth-while vocation. Then we shall have better home-makers and fewer incompetent business women and factory victims.

In the future, when every foreigner in our country receives practical educational advantages and is enabled to find his rightful place in society, the misfits, who are usually the malcontents in every land, will disappear. We shall not need war to call out the patriotism of communities. Foreigners will be grateful to the Government which makes it possible for them to work and live under just conditions, and they will become loyal citizens. When each person takes his own special part in the maintenance of the Democracy, our country will be true to her principles of justice and freedom.

FUNDAMENTAL ISSUES IN EVALUATING COMPOSITION

By Joseph C. Gainsburg, New York University

I

Composition a Much Neglected Subject

Cynics who cry that this civilization of ours is a purely mechanical civilization are given the lie by the powerful strides made recently in the field of pedagogy. For, swift as has been the momentum of scientific progress in physics and chemistry, almost so rapidly has the contagion been spread also to other fields, notably those of sociology, psychology and pedagogy.

Yet despite the advances made in practically all the subjects in the curriculum of pedagogy, that science still has one subject that has as yet no right to hold up its head with the other proud products of its development. Studies in the psychology of reading, for example, have yielded tremendous changes in the methods of teaching it. History, geography and community civics are unrecognizable to the teachers of twenty years ago because of the progress there.

Alone of all the important subjects, composition shows little improvement, if any, in teaching methods. Either by its neglect, by implication, or by open confession, composition is admittedly a subject that has too many difficulties for the teacher,—difficulties in which she has never been given any obvious or practical aid by educators.

It is an old axiom in pedagogy that we can have no impression without expression, either immediate or ultimate. It is equally axiomatic that there can be no expression unless some impression has preceded it. But that very obvious factor has been almost overlooked by teachers of the past, and strange to say, by scientific investigators of the present. Composition has been, and is being taught, as though it is possible to express one's self in language without having anything to express. Conditions in that field are as chaotic today as they ever were; present studies in America tend to aggravate rather than clear up this chaos.

There are those who refuse to admit the general feeling of

hopelessness in our knowledge of composition. But they do admit it, by implication anyway, in their responses to investigations.

Hudelson (5, pp. 15-29), author of Part I of the *22nd Year Book of the National Society for the Study of Education*, shows from the results of three questionnaires:

1—How greatly composition standards differ among the high-school teachers of English throughout the country,—ranging from such vague demands as "general merit" and "decent English," to such formal demands as "rhetorical principles," "fidelity to assignment," or "absence of carelessness." Very few demand *thought* or *originality*.

2—How too much importance is attached to spelling and flowery language, while too little importance to whether the pupil has anything to say, and can say it in the most direct and effective manner.

3—That there is a tremendous diversity in the methods of presenting and teaching composition.

S. Andrus Leonard (8, p. 3), in his book, "English Composition as a Social Problem" says, "Too often in the school class we get as composition nothing better than the acceptable repetition of phrases."

Charles S. Pendleton (14, p. 242), in an article in *The Journal of Educational Method* for February, 1923, states that incredibly few teachers have any instructional resources for any pupil whose manuscript does not show glaring, mechanical errors.

II

Scales, the "Cure-All"

Certainly these are conditions that demand attention, immediate attention. Unfortunately there are a number of enthusiasts who, because of the recent development of Composition Scales, rest fatuously content that the many problems and difficulties that beset composition have already been solved. Whereas in fact, these scales have but served to gloss over mistaken practices and obscure the problems, and, because of their epidemic popularity and uncritical acceptance, to involve the teaching of composition in many dangers and retrogressions. Scales have of course already been applied

with some success to *some* subjects (though sometimes with doubtful success). But then, with the attitude as though they were the patent medicine, the "cure-all" of pedagogy, they came to be applied rather indiscriminately, and less satisfactorily, to a great many other subjects, among them composition.

To understand something of their inapplicability to the measure of composition, it is desirable to follow the progress of measurement from simple to complex products. The measure of *physical* quantities is comparatively simple. There are difficulties, of course. It may require the use of fine instruments and careful calculation. Generally, however, such measure is possible.

It is in the attempt to measure *human* qualities and abilities, however, that obstacles are encountered, obstacles more difficult and insurmountable than investigators have been willing to admit. Many pseudo-scientific investigations have been made which took no account of these obstacles. The resulting tests and measures, published with a great deal of assurance, but with little caution, have met with much discredit in the public mind. In his essays entitled "Prejudices" (10) Mencken writes, "The worst extravagances of experimental psychology are gravely seized upon; mathematical formulae are worked out for every emergency; . . . the aim seems to be to reduce the whole teaching process to a sort of automatic reaction, to discover some master formula that will take the place of competence and resourcefulness in the teacher." Lay criticisms such as this are evidence of lack of public reliance in unproved and extravagant conclusions.

Let us now follow the development of psychic measure.

1—*First attempt: measuring thought.* Measurement of mental products probably had its inception in some such experimental attempt as the writer recalls having read about in a New York newspaper some twenty years ago, when a psychologist gravely made the astonishing announcement that he had discovered how to weigh and measure thought. His process consisted of obtaining the weight of the head of his subject while the subject underwent various changes of thought, and when consequently the flow of blood to and from the brain made variations in the weight of the brain. The differences in weight were then concluded to be the weight of THOUGHT! Certainly that sort of conclusion

was nonsense; the same thought was capable of producing many variations in the weight of the blood. The error, of course, lies in the careless acceptance of the measure of *symptom* as the measure of *cause*. Yet loose association of symptoms and causes is not altogether absent in present psychic measurement.

2—*Measuring a quality whose meaning is undetermined.* Since then the fad for measure has invaded every field. There has been no hesitation even in the claim to measure such qualities whose very meanings are undetermined and disputed. It is said that we are close to measuring "personality." Yet there are few terms with wider connotation, or upon whose meaning there is so little agreement. The best that the dictionary offers is "that which characterizes a person." But what that quality is which characterizes a person favorably, no two people will agree.

The measure of humor has been attempted—yet what constitutes humor is a subject on which there is greater disagreement, sometimes bitter. For a time intelligence tests were accepted without question as a measure of intelligence: but now we are asking before we accept such measure, "What *is* intelligence?" For it may be scholastic, or social, or mechanical, or a combination of these—and surely we must know exactly what it is we are measuring before we measure.

Now, in composition we have the same diversity of opinion as to just what constitutes "merit." And we seem to have the same lack of hesitation in the many claims to be able to measure that "merit."

Perhaps in the future, measure experts will find it possible to measure that much disputed quality called "love," and maidens of that happy time will be able to ascertain that their husbands-to-be are exactly 79% or 93% in love with them.

3—*Measuring a mixture of qualities.* There is a much greater difficulty in measuring many mixed qualities bunched under one term, than in measuring a single quality such as, for example,

length. To take a concrete instance, we recognize the ordinary layman's unfitness to judge accurately an actor's ability, because he is not sufficiently acquainted with all the qualities indicated by "ability." Only the judgment of a competent critic could be accepted, and that only after his careful consideration of *every one* of the many qualities. The critic would find comparative ease in weighing the *mechanical* components of the actor's ability, such as volume, inflection, timbre and scope of voice; or ease and mobility of action and bodily expression. But his difficulties would increase to the *n*th power as he attempted to judge accurately such other, more elusive, component qualities as depth of personal impression on the actor of the text, full interpretation of text, attitude toward the character portrayed, and toward the audience.

Composition merit, too, is a term that involves a great many qualities; yet, strange to say, none but the purely mechanical qualities has ever been given any consideration, while, what is worse, most scale-makers dispose of "general merit" as though it were a *single quality*.

4—*Measuring by the wrong standard:* Measuring difficulties, moreover, increase and make possible serious blunders when tremendously vital and essential qualities are omitted from consideration. Not long ago such a blunder was made in the scaling of food-values on the basis of calories. We know now that it is possible for a man to consume innumerable quantities of calories, yet starve. The neglected factor was vitamines. It is a queer coincidence (and in a certain sense a refutation of mental, or as I have called it, psychic measurement) that in such a *physical* product as food, it should not be possible either to isolate or to measure vitamines.

Similarly in composition there are factors usually neglected, but far more vital than mechanical qualities as a standard for judging merit in composition. These factors are,

roughly, (1) *impression* (rather than the usual, stressed expression); (2) *content* (rather than phraseology and style); (3) *originality* (rather than reproduction).

III

McCall's Defense of Measurement

One of the champions of the system which advocates and defends measurement is William A. McCall, whose recent book, *How to Measure in Education* (9) opens with a chapter defending the theory of measurement. It consists of fourteen arguments, or "theses" as he calls them; these are substantially repeated by Briggs in an article in *The Teachers College Record* (13, pp. 423-452).

McCall begins with the thesis that everything (even every quality) must exist in some exact amount, and that these amounts are measurable. Now if we agree for the moment that measurement of minds and educational products is *possible*, we must refuse to leap rashly, in the enthusiasm of such belief, to the belief that we have actually discovered the mental yardstick for everything, or to the tendency to look on every new scale as though it were proved and accurate. Progress is not made in that fashion. Hasty conclusions, soon withdrawn and replaced by others just as unscientific, serve only to breed a growing distrust in the minds of those in whom there is every need of inspiring a feeling of confidence.

We must therefore investigate cautiously, exhausting every analysis, and we must recognize the danger of applying a measure that at best is but crude.

Let us now examine McCall's theorems to see whether this theoretic basis of measurement of mental products rests on a solid or an unsound foundation; whether such measurement is at all possible, and if it is, what the difficulties are that must be reckoned with. If the foundation proves unsound, we must certainly suspend our approval of the various scales exhibited in the book as perfect products of measuring.

In effect, McCall states the following theorems:

1—We can measure quality as well as quantity. Length, weight, etc., are qualities.

2—Qualities exist in exact amounts.

3—(from thesis 3) Measurement in education is generally the same as measurement in the physical sciences.

Of these three, we can perhaps accept the first and second theses. The third seems to follow as a matter of course: it certainly seems plausible. But its plausibility is precisely wherein its greatest danger lies. The thesis is false:

First, because it is based on an unproved analogy. To be correct, reasoning based on analogy must first show the analogy to be identical in every important respect. Physical and educational measurements present far too great a difference (as will be shown in detail later) to permit the conclusion that they are alike.

Second, because in physics we measure only *one* quality at a time, such as length, or heat—not a combination of them, as in education.

Third, we know exactly what quality is being measured. In education, we are neither sure, nor do we agree on the meaning of the quality measured.

Fourth, in physical sciences, we have a definite and fixed standard to prove the correctness of our measure, whether it be a yardstick or an atomic balance.

Now, in composition, as well as in reading, or appreciation of poetry, we have a great many mixed qualities. Hudelson, for instance, writes, "We must judge from the general impression of *all the qualities* in composition." We do not know which of the many qualities is being measured. And we have no definite standard or "yardstick" to which to refer our measure.

We cannot therefore accept the theory that measurement in physical science and in education are substantially the same.

4—(from thesis 4) Measurement in the physical sciences is not perfect either.

We do not deny the truth of this statement; nevertheless we must take exception to it because it is very misleading. It assumes that measurement in education may at least be as accurate as in the physical sciences. This is false, because:

a—We can measure length, a physical measurement, to within 1/10,000 of an inch by the use of a

micrometer. We use judgment only to determine *portions* of that minute distance.

b—Scales in educational measurement are very crude rulers—such scales as the composition scales have gaps a year apart.

c—Any two micrometers will agree, will give the same accurate results. There are no two composition scales, or intelligence tests that agree with any degree of accuracy.

5—"There is as much need for tests to measure detail as for tests to measure totality."

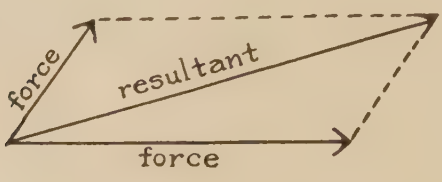
Since McCall here defends the existence of *detail* tests, he assumes that tests of general ability (like "general merit" in composition) need no defense. That is, tests which measure a *single* quality at a time are merely "also useful,"—but, we must believe from his statement, there is a greater need for tests of "totality."

On the basis of McCall's own comparison with the physical sciences, this assumption is false. Physical science never makes the error of attempting to measure total effects, unless

a—every factor in the total effect is known, and

b—the exact measure of every effect is known.

A diagram copied from an old physics text book may serve better to illustrate this scientific attitude.



We know also that the pressure of a gas depends not only on the variations in volume, but upon its temperature. The curve of a projectile is the result not only of gravity, but of its speed, the air resistance, the deflection of the wind, etc.

No scientist in physics would dream of ignoring any of the factors involved. Scientists in the measurement of composition, however, seem unique in not even attempting this scientific analysis and synthesis of the factors involved in composition.

6—McCall admits, with Thorndike (9, p. 6-7), "Present measurement is not entirely safe as a basis for extolling or condemning teaching." Briggs makes a similar admission (13, p. 425).

This statement is frank, and true. Yet it cannot be passed by without criticism, not of the statement itself, but of the lack of its emphasis. Its danger lies in the fact that the statement occurs *only once*, buried in a host of material; that it is never referred to again, nor are allowances made on its account. Briggs later denies his admission by insisting on the value of results (13, p. 427). The average supervisor, on the strength of McCall's book (or others like it), swallows whole the thesis that all the scales *are accurate*, and accordingly applies them to the rating of teachers and methods of teaching.

7—McCall admits only two objections from critics of scales:

a—that there are not enough tests for measuring all the aims of instruction;

b—that tests are sometimes misused.

These objections he easily disposed of by pointing out:

a—that more tests can be devised;

b—there must be greater zeal and practice against misuse.

There are many more objections, so far as composition scales are concerned, however, that McCall neither points out nor answers:

a—The tests are not scientific;

b—They do not measure what they pretend;

c—The quality measured is too complex for measurement, and, since the components are not fully analyzed, impossible of measurement;

d—The method of obtaining these scales depends entirely upon statistics, and that is an unreliable method.

The first three of these objections are discussed in some detail in a further study by the writer on the "Critical Analysis of Composition Scales." The present discussion however deserves a chapter on the fourth objection, the unreliability of statistics.

IV

Statistics, The Basis of Educational Measurement

The writer does not wish to create the impression that he attaches no importance to the value of statistics. The statistical method is a significant factor in investigation, as well as a necessary factor in proof. But in its application to psychology or pedagogy it cannot be considered the total means of investigation, or the sole factor in proof. The results of statistical investigation can be used only to point out possible tendencies, and to open the field for further investigation. To be conclusive, its evidence must be corroborated by other methods, as many as are possible or applicable: such methods as recorded observation, questionnaire, introspection, laboratory experiment. No one method is sufficient in itself to establish or prove a theory.

Composition scales, however, depend upon statistics alone to prove their validity. Even the most recent scalemaker, Hudelson, falls into this error.

Aside from its weakness as conclusive evidence, statistics have other inherent defects when applied to a highly complex problem. Zizek, professor of the chair of Statistics at the University of Vienna, points out a number of limitations, to which I shall refer in a future chapter.

As far back as 1888, another scientist, Edgeworth, called attention to certain other limitations of the statistical method. Edgeworth (3, 1888, p. 601-614; 1890, p. 461-468) wrote for *The Journal of the Royal Statistical Society* (a journal devoted entirely to the science of statistics) several articles on the statistics of examinations. His conclusions are peculiarly applicable to Composition Scales.

1—He says, "We must recognize the difference between judging the value of intellectual pon-

deration (like Latin prose), and judging (or measuring) physical qualities (like the weight of an object). In intellectual ponderation we have no appeal, either the crude kitchen scales or the delicate atomic balance. Besides, we are never certain just what quality is being judged: it is not merely weight or length, but an undetermined combination of many qualities.

2—"Under even the most ideal conditions in the judgment of intellectual ponderation, there is a probable error (which varies with the nature and difficulty of the thing judged). But conditions are never ideal; the probable error is considerably increased by:

—the examiner's idiosyncrasy to each paper;
—the differences between examiners;
—the effect of hurry;
—varying emotions in the examiner give alternate fits of severity and lenity;
—there is considerable error in the examiner's ability to judge how closely the written work is representative of ability in the field examined.

[In the production of composition scales the judges of the test compositions were subject to all the above errors.]

3—"In the measurement of educational products we have no recourse to a really standard unit, like the yard stick in the Tower; therefore we must resort to an *average* as a unit. Here we are in the position of primitive man, who had to measure length by the human foot. The wisest course would be to take the average of a great many feet. Provided the feet were of *one tribe*, with no great variation, we should have a fairly constant measure.

(But in the case of composition, where the writers vary tremendously, and where the works of each writer vary almost as much, there can be no farily constant measure.)

4—"The analogy is very imperfect between measurement of physical and psychical qualities. It is not perfect even between kinds of physical measurements.

"For example, in one experiment in guessing a man's weight, the results grouped themselves into a typical Curve of Error, in which the probable error was 3 1/3 %. The real weight was not considered, only the deviation from the mean. Therefore even guesses seem to be not entirely chaotic in nature; they seem to follow the Law of Distribution.

"But on the other hand, this generalization was entirely groundless in another experiment—that of guessing how many banknotes it took to equal the weight of a gold sovereign. Of the 85 persons participating in the experiment, the guesses were distributed as follows:

Number Guessing	12	10	25	23	25
Average Guess	8½	14	50	100	225

"The correct answer is only 6! But aside from that, any average would be absolutely worthless, on account of the extreme divergence. Instead of a beautiful Gauss curve, we have a totally unbalanced curve whose upper limits stretch to infinity."

(How valid can McCall's analogy to physical measurement be, when even physical measurements bear so little analogy? Certainly, if the judgment of composition is not as completely a guess as the second experiment, of the banknotes, neither is it as perfect a judgment as the first experiment, that of guessing weight.)

5—Edgeworth gives a striking example of the unreliability of the judgment of composition. He writes, "At an examination in classical composition, the mark of one examiner is occasionally five times as high (and once *sixteen* times as high) as that given by his equally skilled colleague to the *same* composition."

6—We recognize, then, from Edgeworth's study, that there is an increase of probable error, and an increase of unreliability in statistical means or averages, as we progress from simple physical

measurement to measurement of complex mental products. Examples of such increasing difficulty are the following:

—The average opinion of the length of a sea shell would be fairly reliable.
—The error would be greater however in the judgment of its area.
—Its resistance to breakage would yield a poor average judgment.
—The judgment of its beauty compared with other shells would be too diverse to make the average opinion of any value.

The judgment of composition presents a closer analogy to the last of these than to any of the others, particularly the judgment of those qualities in composition which William Kilpatrick calls "intrinsic" rather than "extrinsic"; such qualities are *originality, content, impression* on author and author's *first-hand acquaintance* with matter about which he writes.

7—To sum up, there is a progression of increasing difficulty and unreliability in the averages of statistical judgment as we pass from

—rough measure of physical object
—to a guess at its measure
—to a guess at a complex product (like the beauty of a painting)
—to a guess at an undefined quality (like *merit* in composition)
—to a guess where no criterion is given along which to base our guess or judgment. In judging the compositions which were selected as samples or steps in the scales, no judge, in any of the scale-experiments, was instructed as to the criteria for judgment.

V

Status of Present Composition Scales

There is not enough space in the present study for a detailed treatment and analysis of present scales for composition. The writer devotes a separate discussion to that topic. But the discussion of issues involved in the teaching of composition

would hardly be complete if it did not include a hasty summary of the general errors in these scales.

First, the criteria used in judging compositions (either for the formation of scales, or for their application) are disputed criteria. This has been mentioned before; but proof can be found in Hudelson's investigation in the *22nd Year Book* (5, pp. 16, 19, 27-29). The results of a wide-spread questionnaire show that:

1—Most teachers base their judgments on rhetorical principles.
2—Most of them seek mechanical perfection.
3—Models and reproductions are important; fidelity to model or to assignment was sought.
4—Few stress thought content or originality.
5—Scarcely any mention *interest* as an important element in composition.

Generally there seemed to be great disagreement as to the basis for judgment among the many high-school teachers of English who took part in this questionnaire.

Second, there is little, or no consideration given to the most important and vital criteria. The analogy has already been drawn to food, and the fallacy of judging its value by calories alone, without due consideration to vitamines, as yet an unmeasurable factor. It is not intended that this analogy shall serve as proof. But since words have so many meanings and so many shades of interpretation, it is constantly necessary to employ comparisons for the sake of clarity. It is for this purpose only that the analogy to food is given.

The first basis for the judgment of composition, then, should be its power of communicating thought, i.e., its thought content. Another criterion is its power to stimulate emotion and imagination. A third is the convincing tone of truth, of actual acquaintance with the matter it treats.

Surely we expect to find all these qualities in any matter we read. Shall we regard composition as something to be written only, and not to be read? If reading consists of the mental *reception* of the writer's thought and feeling content, then writing, or composition, consists similarly in *expressing* thought and feeling content, preferably content that is the result of experiences, first or second hand.

From this point of view, composition, like painting (and the kind of "drawing" at present stressed in teaching), must be regarded as a creative expression of one's experiences.

Yet these criteria are almost always omitted in favor of those more formal and mechanical elements, spelling, grammar

(this too is vague and meaningless until analyzed), rhetoric, flowery vocabulary and imitation of style.

Third, scales make the error of neglecting to analyze the qualities in the composition to be judged. They instruct the teacher to use a "general impression." But no safe judgment can be made without careful consideration of every element. For example, in judging the value of a watch the expert considers the *case*, which includes judgment of the weight of gold, the amount of engraving, the artistry, etc. Then he examines the *mechanism*, which includes the material, the structure, the design (whether it is efficient or out-of-date), etc.

In judging composition too, we must in all fairness to the pupil weigh with more consideration than is possible in a "general impression." There are many complex qualities to be weighed, of which the following form but a crude and partial list. Whether or not these qualities can all be evaluated with regard to each other, they must at least be given consideration in the final judgment. The listed qualities fall into four groups, arranged in order as they very gradually change from mechanical to artistic, from simple to complex, from obvious to "hidden."

I—*Mechanics*, under which may be included: spelling, sentence sense, punctuation, agreement (of subject and predicate, pronoun and antecedent, etc.), inflection, proper use of words, etc.

II—*Structure*, which includes: paragraph sense (or unity), logic of arrangement, clarity, consistency.

III—*Devices* for arousing interest of reader. Some of these are: beginning with action, or with the unusual; holding curiosity by withholding explanation; use of comparisons; stirring words or phrases to arouse imagery; suiting style to content; etc.

IV—*Content*, the artistic and creative element. This is difficult to subdivide. It includes such qualities as: convincingness (which comes best through first-hand experience); the very selection of topic, or point of view to illustrate the topic; the use of telling and appropriate details; intensity (which is the result of the pupil's own feelings and convictions); etc., etc.

These divisions cannot be regarded as sharp divisions of the qualities of composition; they grade insensibly one

into the other. While *mechanics* and *content*, for example, are fundamentally different, yet *structure* and *devices* are partly mechanical in their nature, partly content. No adequate judgment of composition can be made unless, like the various features of the watch, these qualities are recognized and given careful thought.

Yet no scale attempts (nor is it possible) to analyze any but I and II of these qualities. The Willing scale and the Briggs Form scale (and to some extent, the Lewis scales) do attempt such mechanical analysis. The Harvard-Newton scales are four in number, one to each form of discourse; this simplifies judgment somewhat, but is in effect no analysis of any qualities in the compositions, although a printed list of the virtues and vices of each composition in the scales is of real aid to one using them.

The other scales on the other hand, particularly those presented as the most useful, such as the Hillegas, the Thorndike, the Nassau, and the Hudelson Ability Scales, make no pretense at any kind of analysis. They all insist on the use of "general impression" as the criterion. Briggs (13, p. 428) defends this criterion as the only proper one. The *22nd Year Book* shows that a majority of teachers of English are in accord with this view (5, p. 15, No. 2).

The writer insists however, and repeatedly insists (*and this is the fourth criticism of present scales*) that compositions cannot be measured by this standard.

1—*General Merit* begs the question. It does not define what it indicates, and leaves the same diversity of opinion as though no scientific study of teaching composition had ever been attempted.

2—There is every chance that those judging by such standard use some favorite quality of their own which colors their opinion of the whole composition. This makes the judgment neither fair, nor one by "general merit."

3—Instead of "merit," we actually have "merits" in a composition. We cannot actually compare a composition of good "form" and little meaning, with another composition of poor form, but rich in content, any more than we can compare and give exact evaluation to two paintings, one with wonderful coloring and poor composition, and the other with mediocre coloring but splendid balance.

The evaluation is difficult enough when each element is considered, but impossible on the basis of general merit only.

4—The writer has shown on another page (p. 67) the steps of increasing unreliability of judgment as we proceed from a comparison of *length* (where only one factor is involved), to a comparison of the *area*, e.g., of a sea-shell (in which several factors were involved), to the *beauty* of the shell (which involves many elements).

Consider then how many elements there are in the "general merit" of a composition to make the judgment on such basis anything more than a poor guess.

Fifth in the division of the present chapter is the fact that composition scales do not attain their aims. The writer takes it for granted that the aim merely to measure is not the final goal of scales, that measuring is but a means to an end more worthy. "If we can measure, and not make measure our aim,—" as Kipling might say. Yet we cannot deny a tendency in scales to subordinate all other aims to the measuring aim.

Almost the first printed statement in the record of every scale-making is the declaration that it aims "to create a scientific, objective standard for measuring composition." The scales however are neither scientific nor objective, although the writer must here content himself with a mere statement of this claim, and reserve fuller discussion and proof to another study on the construction of scales.

Still, as has been shown in the present discussion, even if the scales did measure accurately, they could not, by their very nature, measure more than the formal, mechanical elements.

Though not always given definite statement, one aim of all scales is to give a better knowledge of the child. To get such knowledge, the most natural means is to study and observe the child from every point of view that relates to his writing. Instead of which the scale attempts a judgment of him through the judgment of a single product, isolated, without consideration of any of the causes of that product. We know for example, that in his answers to an examination testing a child's information, there will be a variation of results depending on certain subjective conditions of the child. But such creative work as composition will vary much more greatly with the child's mood, inspiration, depression, lack of motive, personal experiences, and the like. Not one

of these is taken into account in using the scale; accordingly the scale does not, to this extent, give any aid in obtaining a better knowledge of the child.

The writer is strongly tempted to digress on this point because of his keen feeling that any pedagogic study should be centered around the child rather than around a product or a subject in the curriculum.

One widespread use to which scales are put is a by-product of scales, not intended in the original aims. Though not, strictly speaking, an aim, it is best known as the *Supervisory* aim. The investigators who produced composition scales hardly anticipated the welcome they would get from supervisors who accept them for their scientific background and for the simplicity of their application to measuring pupil, teacher and method. The scale-makers decry such use of scales, and do nothing to prevent it. They admit, in tiny paragraphs tucked away in some recess of their publication, that the scales are not nearly accurate enough to be used as a measure of teaching or teaching methods—but the rest of the publication overlooks that admission.

On the other hand an aim that is neglected, and that demands inclusion in the scientific investigation of the teaching of composition, is the general aim of "the development of the child's powers to capacity." According to Professor Ernst Meumann, exponent of experimental pedagogy in Germany, this is the *primary* aim. To attain it we must, in composition, aim more specifically at

1—General awakening of initiative in child (giving him greater power of observation, self-mastery or self-correction and imagination);
2—Arousing a permanent interest in composition;
3—The acquisition of knowledge and skill (or skills) in actual writing;
4—Improving methods of teaching composition.

These aims can be attained by a thorough study not only of the child's composition alone, but of the child himself, how he learns and studies, what he is interested in, and what means and methods of education are best adapted to that learning process. It may be objected that composition scales did not intend such comprehensive aims. But any aim which ultimately means to benefit the child will fail of achievement unless it gives full consideration to a study of the child himself. The scales have studied only the compositions.

VI

Criteria in Composition

S. A. Leonard suggests as a criterion to test any composition, "Does the child express his idea in a way to show the action of his own mind upon it?" This is another way of saying that the child must have as a basis for his writing an impression that is real, not superficial. We expect in an author great earnestness and interest in his own writing; in the case of a child, the product may be crude, but the impression on the child must be more stimulating than a second-hand repetition.

But how gauge this impression? In oral composition this is simple, continues Leonard. The expression on the child's face, his spontaneous gestures, his voice and inflection, all give evident indications of the intensity of his attitude toward what he is saying. In written composition, this is much more difficult. We must here depend to a great extent upon our knowledge of the child. And so we inevitably return to the conviction that we cannot judge the child's product without knowing the child.

Judgment should be based on the dominant characteristic of a composition, rather than on a combination of the ratings of the many qualities. It may, for example, display splendid imagination, yet be poor in mechanics and arrangement. Or it may show keen reasoning, yet be poor in illuminating details or in imagination. Or it may be beautifully polished and flowery, yet be empty of thought.

These three examples cannot be compared with each other. They are different. They represent different kinds of minds. The first must be given a rating for Imagination; the second for Reasoning; the third for Form. If the dominant characteristic is particularly good, even a rating of 100% is not sufficient. The other features must be disregarded in the rating (though not in the teacher's efforts to improve). Of course, when teaching is directed toward any one feature, the teacher's rating will be for that feature; but that rating cannot represent the rating for the whole composition, unless it is the dominant feature.

The following list of suggestions on judging a composition may prove useful:

1—Use a motive or motives of greatest interest to each individual pupil concerned. A motive of general interest to the majority may do serious injury to the incentives of many, unless group motives can be found that will interest each of the varied types of children.

2—Give opportunity for many compositions, but judge only by the best.

3—Learn all the conditions under which they were written:

a—physical conditions:
—at school
—home
—pupil's health

b—psychic conditions (intelligence, slow or rapid thinker, past training in writing, reaction to assignment, past acquaintance with it, experiences affecting it, etc.)

Such knowledge as this is necessary to give scientific status to the judgment of a composition.

4—Rate the composition on the basis of its dominant characteristic. Other characteristics may be rated individually, too, but the ratings are not to be totaled.

5—The more important criteria are those of Content, Structure and Devices, rather than Mechanics.

6—A criterion which supersedes all others is the depth of impression on the child who is writing (however that impression may be judged). If there is no impression, the pupil is either "gassing" or "repeating." In the first event, the composition is not representative of what the pupil can do, and judgment of it is not fair to him. In the latter case the composition is not his own (except as a test of his memory). Whatever other qualities may be found in the composition, therefore, they can hardly be valuable for the purpose of judging unless there is also present in some form evidence of the child's real impression.

VII

Suggestions

The criteria given in Section VI are by no means complete, nor are they scientifically arrived at. They represent merely an attempt to apply pedagogic principles before attempting the study of teaching composition. Scales fail of their purpose in so far as they fail to establish satisfactory criteria both for

the judgment of composition and for the judgment of the aims the scales seek to accomplish.

The writer devotes a separate treatment to the critical evaluation of scales and aims of scales. But much more urgent than the need for scales is the necessity for the analysis of composition "abilities," and the search for the factors that will develop them.

One must be careful at this point not to fall into the error, after pointing out the errors of previous investigations, of making a new investigation by the use of the very same methods. It will therefore not be amiss to review briefly what these errors are that must be avoided.

a—Qualities can be studied effectively or measured scientifically only when isolated, or when all other factors are equalized, or when they are known and accounted for.

b—Composition, a highly complex subject, possessing many "intrinsic" qualities, must be studied *intensively* to get any desired quality.

c—The more *extensive* the study, and the more *general* the subject, the more superficial are the results.

d—Conversely, the more *specific* the aim, and the more intensive the treatment, the more real the results.

Scales have studied compositions only extensively, by the thousands, making impossible any detailed analysis or intensive study. They have attacked a very large and general problem, too large an aim to give specific and reliable results. The writer does not propose, then, to write another scale. If time were available, however, he would devote it to the construction of an Observational Chart, on which could be recorded separately all the factors of a pupil that effect his composition. Such a chart, applied to a dozen children for an entire semester, is capable of yielding results of tremendous importance. The writer would like to develop and test such an Observational Record Chart in Composition. If not too complex, it might even be useful to the classroom teacher. Possibly this suggestion may be of interest to those already making researches in composition.

There is another experiment under way, however. And in this connection, attention must be called to an investigation into composition by Kayfetz (6).

This study, comprehensive, thorough and scientific, proves the value of dramatization as a classroom method in composition (in this study the compositions were reproductions of simple stories). Kayfetz made no attempt to judge the effectiveness of reproduction as opposed to originality.

It is the writer's intention, in view of this investigation, to study the results of two kinds of experiences, real and dramatic. It is evident that in the child's ordinary life he lives through countless *real* experiences, and by comparison, extremely few dramatizations of experience. Certainly dramatizations of stories are not as close to his life. Most of his experiences make only an ephemeral impression on his mind; even the strong impressions are temporary or are lost at once because there is no translation into significant *expression*.

If only it were possible to provide strong classroom experiences (so as to have them common to the entire class), and if they could prove valuable stimulants to expression in composition, it would then be an easy step to the utilization of his experiences outside school. This would tend to open the entire life of a child, including his extra-scholastic life, to the searching gaze of a keener observation. Even though for the sake of expression in written form, it would open his eyes to the world that he had regarded as closed to his mental activities. It may never result in a love for writing, but it is probable that it will result in a better retention of impressions.

These are but conjectures. Scientific experiment will confirm or reject them. But if it is true that pedagogic conditions should simulate life conditions as nearly as practicable, then this experiment will go one step further by enlarging the classroom and extending it into Life itself.

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SOME WHYS OF WHIMS—A GENETIC STUDY

By Garry Cleveland Myers

Below are some notes on what seemed to be whims of an infant. Most were recorded during the years 1914 and 1915; the second and third years of the writer's first baby. They are presented with the hope that they may help us a little to interpret more charitably the conduct of children. Obviously these notes are not meant to be models of child training. They should be read with a view to analyze, describe and explain certain modes of behavior. The age of the child at which each note was recorded is indicated below. For example, the child was 390 days of age when the first note was made.

Day 390. When on second feeding J refused cereal, he pointed to the water pitcher. Given a drink, he took his cereal, then wanted a drink before each succeeding spoonful, and would have it no other way.

Refusing cereal from a dish he enthusiastically ate a spoonful from the pan in which it was cooked. Begged for more from the pan.

Day 455. For some while has been given water from a glass only. When offered water from a cup today refused it, but drank freely from a glass.

Day 471. Objects to being held on one's knee or to aid while walking.

Day 505. Will often refuse a graham cracker, which he seizes and eats with zest if put somewhere within his reach. He likes the getting of it alone.

Day 552. For some time when, upon his refusal to eat the last part of a dish of cereal, we put the spoon through the back of the chair he will take it with great pleasure and thus seem to relish much more food. Likewise, when his first acute appetite is satisfied, he will coax one to put the spoon through the chair-back to feed him.

Day 563. One evening for fun, I sprayed his foot before spraying his throat, and for a week this had to be repeated.

Day 568. This morning for the first time he wanted mother instead of me to feed him, wholly refusing to eat for me. She had always fed him before at that hour, although I had often fed him in the evening.

If he grows tired of what one is feeding him and one puts

him down and feeds him through the back of the chair he will finish his allowance with delight.

Day 580. Tonight he would not eat for me at all, but ate heartily for his mother. She usually has been feeding him.

Day 582. Now that he can feed himself and eats at one place he will not "allow" us to feed him at all, nor will he eat at the table.

Day 586. Would not go for his supper till he had his spoon from the drawer. Then when he got on a box by the window he would not let me feed him, nor would he feed himself. Kept pointing in begging way to the cupboard, and any suggestion that he eat angered him. Finally mother understood and brought his plate and put it under his dish. He uttered a lusty "Ash" and ate heartily, even allowing me to feed him.

On his going to bed several days ago, mother kissed the doll and later Daddy; then gave J a drink, and turned out the light. Since then, exactly that order must be followed inviolate.

Day 603. When offered milk in a cup without a handle, he refused it, but when it was given in a cup with a handle he drank a great deal.

Day 614. Contrary to his regular habits he refused to have mother dress him on waking today, but insisted that his aunt do it.

Day 618. While he was developing scarlet fever, certain things I only could do and certain ones mother alone could do.

Day 626. Mother only can do things for him. Almost always irritated by nurse when she tries to do anything for him.

One kind of medicine he likes, but mother must always sit down to give it to him. She had sat when giving it to him the first time.

When he takes milk after a few sips all the rest of the allowance must be poured into his cup.

When I bring his milk to the door and look in at him, he will not drink till I go away. He had been drinking it in my absence.

Day 633. When about to drink milk for which he had cried, he suddenly paused and begged mother to put her apron on as usual.

Day 636. He does not want mother to read in his room. It means less attention to him. Now he is ill with scarlet fever.

For about a week when mother appeared with milk, he would have to have his throat sprayed first. That had been the regular procedure.

Once she threw the ball against the wall to amuse him when he did not want to take his milk. Now that must be repeated before he will drink the milk.

Day 639. Still wants the rest of the milk poured into the cup after a part is drunk.

Beginning today, he invariably must have a handkerchief to wipe his nose before he will drink milk. This had been done once yesterday.

Day 665. On return from outing, he angrily objected when I offered him a glass of milk, but he begged that mother give it. Later, he wanted her to give him a drink of water, although he finally took it from me.

Day 665. Out of sorts, did not want me to brush my hair. Wanted me to comb it.

When he found my hat on the table it had to be put away, but when mother started to put it away he objected. I had to do it.

When given graham crackers always wants two, which he holds so close together that the symmetry is maintained till all are eaten.

Day 686. Sometimes he will want me to give him a drink when mother offers it or vice versa. Came to me to have bib taken off this morning, and refused to allow mother to do it. Will not eat oatmeal for me. Mother must feed him and eat nothing in the meantime, while I must be eating.

Day 690. Yells loudly if I attempt to feed him.

Day 693. Mother must feed him at breakfast, but I may feed him at night.

She must give him water on going to bed, but I when he is in the bath room or when he rises. These whims are decided.

When he awoke at night out of sorts, she alone could comfort him.

Day 695. Screamed objection when I started to put his coat on him. Mother had to do that. When she was not present one day, he made no objection. She had to give him a drink on her return. Sometimes she has to spray his throat, sometimes I do.

Day 702. Whims more and more pronounced. Some things I must do and others she must do.

When mother thoughtlessly removed his bib, he cried with many tears. I was to do it, since I had been doing it.

Day 702. I had for a few weeks put him to bed. Then for novelty, he enjoyed her doing it after which time she alone dared do it.

Day 714. I caught him as I was on my knees in the park,

when he ran down a little hillock. He would not repeat till I was in the proper position.

Day 727. Angry when oyster broth was set before him to eat. But when mother showed him that we eat oysterettes, which he had not seen before, he wanted to eat it, and with them in the broth, he ate very heartily.

Day 735. When out for a walk, he wants to go by certain familiar streets; and, if not favored, will tug and coax and finally become very angry.

Puddings, like cornstarch, he can rarely be induced to eat alone, but if after he is served, we proceed to eat such food, he will eat it with apparent gusto.

Day 879. The last several mornings he did not want to be dressed or to have his shoes put on. For months he has demanded that mother hold his head while I spray his throat. When this was begun he then, with scarlet fever, had strongly resisted.

Out on street, he likes to walk on ledges and jump down therefrom. Hands must be held by father and mother during table silence.

Day 888. Does not want me to stay in bedroom while he is going to sleep. One evening I had scolded him for "not going to sleep" and he fell off to sleep while I was there.

Will not start to eat till mother begins.

At J's bed time, Daddy must stand at the foot of the bed while he jumps on the bed as he had done several nights ago. Now a regular event.

Day 895. Will let mother only do certain things, as to bathe him, and he prefers that she give him water to drink. She generally has done them.

Takes a notion at times that mother or I must do something for him, or that I must not look at his baby sister. Back of latter, is the reason that I then do not play with him on request. *If the parent requested says he or she has not time or will not do it, he is content to have the other do it.* We are to blame for most of his whims.

Day 990. If I have been bathing him for a few evenings, when mother starts, he objects.

Insists on being dressed in mornings in one certain chair by the window and objects to being taken to a more comfortable place. Was accustomed to be there when radiators were on in the winter.

Day 1036. If in play, I put dirt on his cart or in a place contrary to what he seems to have planned, he yells objection and proceeds to remove all I had put there.

While digging, he has certain definite plans. If I put dirt

from a certain place into the cart and he discovers it is not a part of his plan, he is much perturbed, and proceeds to dump out the dirt.

Day 1048. Insists on being called Johnny, though he had heard that only once or twice. Always corrects and shouts "No, Johnny." Likewise, baby must be called Bettie or Bettie baby.

Day 1121. Very angry if one cuts his orange into small pieces. They must be large pieces.

Day 1228. He cried pitifully when a new hat was put on him. Wanted his old one. It was days before he would consent to wear the new one.

Day 1261. Wants me rather than another to dress him now, and wants apple peeled in a certain way and bread cut in so many pieces.

Day 1290. Since mother has always bathed him, he seriously objects to my doing it or even undressing him.

Day 1304. When in the night I tucked him in, he objected and demanded mother. I ignored and he wept with bitter tears till mother came to his comfort. (My error.) She had tucked him in.

Day 1376. Very angry if one puts sugar on his oatmeal before, instead of after, the milk.

Objects to my dressing him, covering him at night, or putting sugar or milk on his cereal.

B at two years of age will go without food rather than take it from anyone but her mother. The baby at nine months will, after waking by day or night, go back to sleep if tucked in by mother, but rarely if by any other.

Conclusions

What seem mere whims are but modes of behavior which have become habitual. They seem to arise out of chance experiences which bring strong initial satisfaction or which become a part of a general satisfying situation. The satisfyingness may be a matter only of habitual adaptations.

The adult who will have his coffee only in a certain cup, who will not eat comfortably, save in a certain seat beside the table, who can worship only when sitting in a certain pew, who cannot write thoughtfully without holding in his hand a certain pen, who cannot do good mental work except at a certain desk, or in a special chair, or in a particular environment, is no less whimsical than were the infants of this study.

To look upon whims from this viewpoint may make us more charitable toward the conduct of other adults and certainly more sympathetic, tolerant, and patient toward the small infant and the school child.

The data of this study seem to suggest that when we see what seem mere whims, we should seek to find their source in earlier experiences in order to interpret such forms of behavior and to deal with them intelligently. To study thus the foibles of our friends and associates should help us to check up on our own caprices, to correct them and to prevent an excessive number of them growing in our conduct.

To study whims in small infants and school children will show us how almost completely we adults help propagate such whims and guarantee their long perpetuation. Certainly the writer cannot justify all his contributions to the caprices of the children studied in this paper. On the other hand, it is hoped that these children rarely were punished by their parents for the whims which they prompted and promoted. As a rule, it would seem advisable to try to prevent the development of whims; but very often they steal on so subtly that they are well established ere their being has been recognized. We find them in all children and adults. Who is it has no whims? Paradoxical as it may seem, when whims, as popularly thought of, are analyzed they are no longer whims. They are but habits.

BOOK NOTES

Co-operative Democracy. By JAMES WARBASSE. New York, The Macmillan Co., 1923, 493 p.

This book meets a long-felt need, for we have nowhere had so competent and comprehensive a survey of co-operation throughout the world. It is made by one who has had many years of experience with it in many fields, and who believes that it will ultimately transform human society, but who is not a socialist in a sense that can offend anyone. He invokes the "30,000,000 organized co-operators in 37 countries of the world, who are now building quietly and without ostentation a different sort of civilization within the very structure of the old order." His purpose is to show how the "individual may save himself from being enveloped and dominated by centralized power, and to show the possibilities of preserving personal freedom without relinquishing personal authority through the voluntary association of neighbours. Palliative methods can do only temporary good, and co-operation can come only by evolutionary methods, not by sabotage, strikes, or even votes. For twenty-five years the author has observed and lived within, and in close contact to, a society thus formed, and believes it the most wholesome yet devised. One of the most impressive chapters describes the present status of co-operation in many lands where the profit-motives have been eliminated. The Co-operative Union of Great Britain distributes over $1,000,000 worth of goods annually and returned $65,000,000 savings returns in the form of dividends. The co-operative wholesale society embraces 1,209 societies and has 116 factories and productive industries, owns 30,000 acres of farm land, has its own steamships and efficiency shaft, a bank deposit of $500,000,000, and is next to the bank of England in fiscal importance, but this movement has never been subjected to socialistic influence. In Germany where the movement started much later there are now 40,000 such organizations. The Hamburg Society has 130,000 members. Nearly one half of the population profit by it; and the central office has a printing plant employing 500 people. In Germany this movement forbids all political activities, and several municipalities have joined these societies. In Russia, too, despite difficulties with the Government, the movement has lately taken on vast proportions, the Central Organization having a staff of 2,709 people, and all the Societies having 250,000 employees. The Moscow Consumers Society now has 650,000 members, 255 stores and so forth. So in every country in Europe the movement is well established. The author is convinced that ultimately the majority of people in civilized countries will become co-operative and perform for themselves most of what is now performed for profit-making purposes.

These societies in each country should now unite into an International Organization. Thus, co-operative democracy would ultimately constitute a vast non-governmental society, and profit-making business in the present political state would slowly die of atrophy. Very ably, in the different chapters, the author presents the various aspects of the movement, its history, meaning, methods, ethics, business soundness, relations to the State, to government ownership, politics, and tells us just how a democratic, non-governmental substitute for the political state should be constituted. He devotes much space to the methods of profit-making business, relations of co-operation to labor movements, agriculture, socialism and so forth with a valuable appendix of literature on the subject.

Modern French Philosophy: A Study of the Development Since Comte. By J. Alexander Gunn. New York, Dodd Mead & Co., 1922, 358 p.

This able English scholar spent some time in Paris developing his doctoral thesis and coming into more or less personal contact with the prominent philosophers of France, principally Bergson, who contributes a brief introductory note.

Cousin was an exotic, and not only did his system pass, but French philosophy has been revolutionized and, what is more important, nationalized, in the period under review. It expresses better than the philosophy of any other nation the deeper things in the French soul, is not broken up into schools, not entirely esoteric, for each writer addresses the general intelligent public; and, best of all, it is more emancipated from theology and its problems than Germany where, from Kant to Hegel theological problems vitiate the true expression of philosophic thought.

The chief chapters deal with science, freedom, progress, ethics and religion, the story of each of which is told, and the general conclusion is reached, that while there is a philosophy that transcends national and racial boundaries, the traits of which have become a part of the general consciousness of mankind, there are other differences which express the vital genius of nations, and it is in these that the French excels all other philosophies. Theology contains a vagueness as illustrated in Germany. The fact that philosophy is taught in all the lycées has developed a large clientéle of minds interested in philosophy, and the spirit of criticism is as rife and as acute in this department as it is in literature.

"Philosophy in France is not written to appeal to any school or class," nor even to any academic circle, but it makes its pronouncements to humanity and its appeal is democratic and hence, remarkably clear. It has not forgotten the influence of Descartes in this respect, nor the slogans of liberty, equality and fraternity.

The real victories of philosophic thought are not systems, but the discovery and creation of ideas as forces. The production of ambitious systems claiming finality has never attracted the French mind. Philosophy has, however, been far more influenced even in the domain of metaphysics by psychology.

Introspection, too, has had its influence ever since Pascal, and the remarkable revival of interest in Maine de Biran has great significance. Sociological considerations are never pressing and French philosophy scores for clearness, correctness and vitality.

The Malady of Europe. By M. E. Ravage. New York, The Macmillan Co., 1923, 250 p.

The author of this book, who also wrote "An American in the Making," sums up his views in a program put forth with hesitation, substantially as follows. Our present isolation is wrong in every way. Nations are not solid units. The masses of the people in Europe are not represented by their rulers, who do not mirror public opinion. In France this is true of the press, which is simply the propaganda of the government. Wilson, more clearly than anyone else, saw this and would have appealed to the people of Europe. He foresaw the colossal evils which would result unless the peace were concluded without victory. France has made a tremendous mistake in entering the Ruhr. Her policy will bring monarchy back to Germany. We are new Europe. All come to our shore and forget old allegiances; therefore we minimize national distinctions in Europe, and regard it as a whole. The Treaty of Versailles is a dead letter. The U. S. A. might take over temporarily the entire debt France claims from Germany. We are immensely dependent upon Europe, but can influence

every country there far more profoundly than we have ever dreamed possible. The Treasury Bonds based on this reparation debt could rebuild devastated areas, and should be secured by a lien on the resources of the German nation; this would make the restoration of monarchy impossible there. We should also lend a friendly hand to Russia, which, as it got rid of Czarism, can be trusted to get rid of Communism in due time. Economic co-operation should take the place of political interference. The old statesmanship in Europe has proved itself utterly incompetent; America has nothing in common with it and the spirit of America has pervaded the masses in Europe. Labor there is pure Americanism.

The author writes in a most trenchant style, and with rare command of the facts of recent history bearing on his theme. If he seems to some readers pro-German, he is a hundred per cent American. His book touches nearly all the great open questions of international relations so far as Europe and America are concerned, and should be read and pondered by everyone interested in these themes.

Freedom and Growth, and Other Essays. By EDMOND HOLMES. New York, E. P. Dutton & Co., 1923, 312 p.

For thirty-six years the author inspected elementary schools, retiring in 1910, just as he "was beginning to take a more or less intelligent interest in some of the larger and deeper problems of education." All the fifteen essays have been written since his retirement. It is impossible to do justice in our space to the various topics treated—socialism, Eucken, ideals, discipline and freedom, drudgery, the real basis of democracy, freedom and growth, religion as the basis of social reconstruction, the philosophy of my old age, psychology and sanity, the spirit of the quest, the teaching of Jesus, and so forth. The author is an ardent advocate of self-development and education which shall develop all the capacities of the child to its full. "The cult of the transcendental God, involving as it does profound disgust of human nature, is the evil genius of education." God is immanent, and we must have inexhaustible trust in human nature. Young people must discover this. Scholarship is not enough. There must be an active quest for truth, not only for its own sake but for character building. The spirit of joy must pervade all the work of education. Jesus was the great teacher and he tells us why and how. Eucken has grave limitations because he knows so little of the spontaneities of faith and intuition outside the field of European philosophy. He seems groping toward what was expressed far better in the Upanishads without knowing them.

To find a retired educator thus broadening his views of his vocation, and developing such a rich and sound philosophy in his later years is a rare thing in the history of education. We can think of no parallel least of all in this country. It is an unusual book which every teacher who has real interest in his work should read, for it will give him a new sense of the dignity and of the possibilities of his profession.

The Coming Renaissance. Edited and arranged by SIR JAMES MARCHANT. London, Kegan Paul, Trench, Trubner & Co., Ltd., 1923, 259 p.

It is certainly very optimistic to consider that there is a coming renaissance, and a happy thought of the Editor to bring together these dozen and a half papers by different authors, somewhat arbitrarily grouped under the general headings—coming of renaissance; where it must begin; renaissance in science, education and philosophy; factors in the renaissance of civilization. In one of the best papers Zimmern stresses personality in national progress. We have trusted far too much, he says, in organizations, which have limited the sense of personal responsibility, and mediated not only between man and God, but between man and the world in which

he lives. For one whole problem solved there are ten new ones, and this is because the real problems are not political but spiritual. The problems we thought we had to solve to attain peace were only a façade to conceal the greater problems behind—molds into which men, incapable of obtaining their needs in truer form, followed the nineteenth century fashion of pouring their needs and desires. The function of a nation is to make men conscious of their real heritage and powers, to help them know themselves and win confidence to expend themselves for their fellow men. "Where the State ends humanity begins." We have trusted too much to the sphere of Caesar. The League of Nations is the best constructive agency devised for rendering unto Caesar his due, and citizenship will always remain a very important side of life; but this takes us only to the threshold of the spiritual. Perhaps the peace of Geneva may be a prelude of something better, but it is nothing more. President Jordan says we must even give up the idea of punishing a refractory state by force of arms or commercial isolation, because we cannot enforce peace by war. Thompson finds racial renaissance possible only by eugenic methods. Geddes wants a more idealistic interpretation of life, and thinks the chief hope of the world is a better organization of the too-isolated and self-contained sciences, which have split too far apart. In general external organization is inadequate, and even the further organization of Christianity may raise false hopes. The women writers see hope in enlarging the sphere of womanhood, and a new partnership between the sexes. The clergymen want a higher manifestation of a religion not of dogma or form, a unification of churches of faith with science, and of secular with sacred lines of work. Grave are the dangers and diverse are the ways of salvation here sought. All these authorities agree that a new civilization is possible, and some think that it is inevitable and at the door.

The New Decalogue of Science. By Albert Edward Wiggam. Indianapolis, The Bobbs Merrill Co., 1923, 314 p.

This remarkable book the author has the courage to address to statesmen, to whom he lays down ten laws of life which they have neglected, and which he thinks fundamental for statecraft. These laws are:—(1) the duty of eugenics; (2) the duty of scientific research; (3) the duty of socialization of science; (4) the duty of measuring men; (5) the duty of humanizing industry; (6) the duty of preferential reproduction; (7) the duty of trusting intelligence; (8) the duty to art; (9) the duty of internationalism; (10) the duty of philosophical reconstruction. What could be more fundamental? Although these chapters have different degrees of merit and betray different degrees of information, they are all cogent and almost credal, and expressed throughout in a captivating and popular style. It should be an academic text-book, although it is a little difficult to determine in which department it would fit best. Biology, sociology, economics, government, politics, psychology, might all compete for it, but probably under our rigid departmental system it would find its place only as a reference book. At least it merits serious attention by all who are interested in any of these lines of study.

Hellenism and Christianity. By Edwyn Bevan. London, George Allen & Unwin, Ltd., 1921, pp. 275.

This is a volume of essays on various topics,—the east and the west, Greek anthology, the first contact of Christianity and paganism, dirt, reason and dogma, Christianity and the modern world, the genetic redeemer, and so forth. The author insists that "the modern west seems to him still for a large part to require conversion to Christianity. Such genuine Christianity as has existed in the west has, no doubt, exerted an incalculable influence

in different degrees over the whole field, but when men contrast our modern western with eastern civilization and lay stress on our standards of political life, individual emancipation, our science, or mastery of the forces of nature, they are pointing rather to the Hellenic rationalist factor in our civilization than to the Christian. It is that which constitutes the 'westerness of the west.' "

In his essay on eschatology he concludes that a real presence of Christ in the hearts of men may, and probably will, come into the world, and that something of this sort will "be indeed the return of the Lord." But in general all these intimations which sustained the hope of the early church are only tropes and symbols. He pleads for a Christianity that shall maintain vital and sympathetic rapport with science.

The author's standpoint is broad and progressive and on the whole erudite, but to minds which are advanced in this field he has very little new to offer.

The Psychology of Society. By MORRIS GINSBERG. New York, E. P. Dutton & Co., 174 p.

This hand book lays fundamental importance upon the nature of instinct and its role, and on this basis the author deals with some of the more important recent theories, and upon the roles of will and reason and their relations to instincts and impulses. He also treats the nature of the social mind of tradition, custom and the various units that belong to social aggregations and social and democratic organizations. He deals fully with the theory of a social or group mind, a general will, racial or national traits, the psychology of the crowd and public opinion. Both the intellectualists and the anti-intellectualists are guilty of mischievous and misleading separation of the empirical from the rational. The author shows that the conception of a social or group mind is of no great value to social theory, and that it is fraught with considerable dangers, particularly in the view of social philosophy. Society is a network of individuals related in innumerable ways, varying enormously in character and complexity. Some relations of individuals can be organized, others are too subtle and vague, but are only expressed in popular movements, public opinion and so forth. He deplores reaction against reason and the cult of the irrational. Social institutions do contain both rational and purposive elements. We cannot rely wholly upon mystical elements, but need ever more reason. The author writes with a wide perspective and with great insight, and has given us a valuable and timely volume.

Christianity and Social Science. By CHARLES A. ELLWOOD. 220 p. *The Reconstruction of Religion.* By CHARLES A. ELLWOOD. 337 p. New York, Macmillan Co., 1923.

The second of the above books by this insightful writer, sub-titled a Sociological Review, assumes that the essential problem of life is not material but psychical—in a word, life needs to be "eupsychic," or, in other words, religious. The war was due to the decadence of ethical religion, and the only hope of the world is to bring it to moral sanity and good will. Intelligence, rather than tradition or emotion, should guide us, even in religious life. Christianity is powerless before the tasks that now confront it, and religion must be reconstructed, not from a philosophical or theological, but from a sociological standpoint—that is, social science must find its completion in social religion which is only another aspect of it. Religion lives in a sphere of faith and, therefore, transcends science, but this faith must be rational. So these chapters discuss the social significance of religion and of Christianity. He tells us how semipagan our civilization is. He wants to make Christianity a positive religion

of humanity, and traces its essentials in family, economic, political and social fields, and exhorts the church to rise to its new opportunities.

The first of the above books, and the smaller, consists of eight lectures, given at the Yale Divinity School, and covers somewhat the same ground but in a different way, which marks at certain points considerable advance in the author's thinking. The lectures, which discuss the principles of socialization, of service, of love and of rationalization, are perhaps the most insightful. The author has the utmost faith in religious education and leadership.

The Field of Philosophy. By JOSEPH A. LEIGHTON. New York, D. Appleton & Co., 1923. 584 p.

The author of this book has had many years of experience in teaching introductory courses to philosophy, and here gives us the ripened material which he has used in the form of a volume of unusual interest and with a very refreshing originality of treatment. In the first part he discusses the chief problems and standards of Greek and medieval philosophy, in the second, of modern philosophy, and in part three he gives us an outline of the chief problems of constructive philosophy, treating under the latter head evolution and teleology, spiritualism and pluralism, the self, ethics and social philosophy, the status of values, the philosophy of history, epistemology, the criteria of truth, and so forth. It is quite true that a purely historical method leaves students confused, and we can quite agree with the author that the time has come when oriental thought should be given more recognition.

The general upset of opinion due to the war, the industrial unrest, the rise of the proletariat, the excesses of modern art, Freudianism, the lack of any recognized foundations for criticism, the development of crude rationalism in many directions, and the decay of religious conviction, lead the author to the conclusion that the only way to improve our social life is to alter the scale of human valuations, raise the standards of taste, and rescue education from its present state of "anarchy." To end this chaos we must have a coherent philosophy, or King Demos or King Plutos will get us. The writer has little trust in any kind of plebiscite. The wise must be heard from, or we shall lose a sense of organic wholeness and unity with self and the world which alone gives poise and stability to individuals and nations. It is this deep sense of the practical needs of philosophic thinking that gives this book its chief merit. It makes the author's philosophy intelligible to every thoughtful reader, and is an excellent propadeutic.

Race and National Solidarity. By CHARLES CONANT JOSEY. New York, Charles Scribner's Sons, 1923. 226 p.

"Will the distinctions of race and national consciousness eliminate group feelings and antagonisms? Will its destruction make for the good of mankind? Is it probable that loyalty to groups based on economic interest or on feelings of caste will make for greater good than loyalty to groups based on race and nationality? These questions I am inclined to answer in the negative." The author then attempts a critical examination of the idealism which underlies the attempts to eliminate all distinctions between men based on race and nationality. In other words it is an enquiry into the validity of much of our current social idealism.

In attempting to answer these questions the author devotes his chapters to moral values and the sacred; the problems before us; internationalism and the maximum good; internationalism and our good; the appeal of democracy; and, the choice before us. Never before has man had the power and the knowledge to determine his own destiny, and the white

race must seize this psychological moment or decline. If we can rise to this opportunity we shall have another great era of race expansion.

Samuel Adams. By RALPH VOLNEY HARLOW. New York, Henry Holt & Co., 1923. 363 p.

Samuel Adams, generally called the father of the American Revolution, in this book is characterized from a more or less psychological point of view, so that we have here another volume which is at the same time historical and diagnostic. He was singularly incompetent, and failed in business and in the practice of law; he also showed incompetence in various other directions, until in the early forties he emerged from obscurity, and really became the father of the American Revolution. His Anglophobia, rendered more acute because British restrictions had impaired his father's fortunes, became intense, and when in the early sixties of the eighteenth century the Colonies seemed to be settling down to complete tranquillity under the British suzerainty, his persistent radical activities and his marvellous genius for political agitation, kindled a flame of revolt until at last the Colonies declared their independence.

The author's psychology persists largely in applying Adler's doctrine of compensation. Adams had an inferiority complex owing to his various failures, for which he compensated by agitation. His mind was saturated with the second book of Locke's Government, and this he preached unscrupulously with less regard to fact and reason, and impelled by intense emotivity. He is thus represented as essentially a neurotic, and the reader almost wonders whether, but for him, this country's relations to Great Britain might not have been somewhat like those of Canada now.

The book is an excellent history of the whole background of the events amidst which Adams' life deployed, and is fascinating from cover to cover.

Causes and Consequences. By SIR BAMFYLDE FULLER. New York, E. P. Dutton, 1923. 291 p.

This is a collection of sixteen essays, some of which have been published before, on a diversity of topics—race and nationality; ancients and moderns; liberty; ultimate facts in economics; autosuggestion; nervous triunity; the laws of the mind; the brain as a laboratory; time and space; vocabulary and grammar; logic; motives and feelings; free will, trial and choice; foundations of morality; the development of art; and amusement. This author of "Indian Life" and "The Science of Ourselves," is a kind of philosophical psychologist. He writes in a sprightly and attractive style, but his essays will appeal not to specialists in any of the subjects treated, but to the general reader. He is a bold man who will venture into so many fields and give us such confident individual verdicts without, we fear, apropounding himself in any of them. His muse is not genius or expertness, but good healthy common sense.

How to Write Stories. By WALTER B. PITKIN. New York, Harcourt, Brace & Co., Revised Edition, 1923. 305 p.

In a previous volume our author has addressed the cultural, but this is solely for the young writers, of short stories, who often fail in psychology and lack knowledge of business conditions. The United States is far and away in advance of any other country as regards young writers, and the best of those now active are quite the equals of any of the older writers.

The fifteen chapters include all that the young writer should know—plot building, what to tell, producing effects, character action, comedy and tragedy, order of events and so forth. Plot building is given a long chapter, but we think the author's own psychological background here, where he

invokes psychology, is somewhat lacking. The chapter on marketing is admirable, and in this the author seems to have a masterly command of all that it is necessary to know. He pictures the discouragement which beginners are so prone to encounter, tells them of the enormous income that may be derived from short stories if translatable into motion pictures, although not one in a hundred is fit for this. He advises all authors to sell only first rights. The style throughout is lucidity itself, and of the half dozen books lately come to the present writer's notice on this subject, this seems to him distinctly the best, and one which everyone who is ambitious to write short stories should read and ponder.

Home and Community Life. By GERTRUDE HARTMAN. New York, E. P. Dutton & Co., 1923. 200 p.

The author of this book feels acutely that real education must fit the child, not only for citizenship, but for an accurate conception of the world, particularly the industrial world, in which he lives. This will give the child the proper orientation for all his subsequent activities. Accordingly the author takes up several score of topics, such as family, food, clothing, shelter, the community—often specializing, e. g., on transportation, with sections on the street car, automobile, railroads, bridges and so forth. Under communication, she treats the post office, newspapers, telephone and telegraph. There are many sections under recreation and amusement.

In Part II, social evolution, she reverts to primitive life, which children can so easily understand. There are sections on tree-dwellers, cave men, the early sea people, pastoral, agricultural and pioneer life; the development of the factory, electricity, mail carrying, money, cities and so forth. Each of these many topics contains first a few simple suggestions followed by references to books and articles, which make up perhaps two-thirds of the book.

The general idea that animates the author, that the child should know its environment, is, however, as revolutionary as it is admirable. Nothing would more enrich our curriculum than to have it mainly devoted to such topics, and the author deserves the highest praise for the conception of this book, and the great diligence she has shown in finding all these references. A very useful book could be written on every topic. But what teacher could teach anything to her pupils on any of these pregnant themes without vastly more knowledge than he or she at present possesses. The book is suggestive in the highest degree and should be read and pondered by every teacher, but in the present condition of things we fear that there are very few who will be able to make it practical.

The Golden Bough: a Study in Magic and Religion. By J. C. FRAZER. London & New York, Macmillan Co., 1923. 752 p.

In this heavy volume of 752 large and rather small typed pages, the author seeks to epitomize the twelve volumes of "The Golden Bough," giving their substance in better perspective, and incorporating his own latest conclusions. He still believes that the reverence for trees is subordinate to the fear of the human dead, which he believes to have been "probably the most powerful force in the making of primitive religion." It is impossible to summarize the conclusions laid down in these sixty-nine chapters, each covering as it does a large number of different subjects. Everything still centres at Nemi. He still holds that science has much in common with magic because both rest on faith in order as the underlying principle of all things. Magic preceded belief in the Gods; when this came, religion as we understand it was born. Science superseded religion, and may itself be succeeded by some more perfect hypothesis,

perhaps by a totally different way of regarding phenomena as shadows on a screen.

There is a subtle charm about this book. The author has devoted a long and laborious life to the development of a few great theses, which show him to be the most astute and psychologically minded of all anthropologists who have busied themselves with primitive beliefs and rites. His studies constitute a new bond between anthropology and what we should call the underlying psychic processes of religious and specifically Christian faith and practice. The world has from the first believed in the higher powers of man, his control of nature, in dying and rising gods, sacrifice and atonement, the souls that watch and seek and find rest, in sin and salvation. Thus, quite apart from his service to science, we believe he will be known to future generations chiefly as the explorer of the deeper truths of Christianity as found in the folk-soul of primitive peoples. There is a charm, too, about his style, and this book is a masterpiece of condensation and human interests. We cannot conceive how anyone interested in the fundamental problems of human life, having once begun this book can ever lay it aside until it has been read to the end.

General Psychology. By W. S. HUNTER. University of Chicago, Press, Revised Edition. 1923. 368 p.

This book is written in the belief that too much stress has been placed upon normal, adult, often called, pure psychology, and to correct this the author presents a general survey of the science in all its departments, with behaviorism and structuralism prominent. He divides his material into two parts: (1) the fields of psychology, animal, individual and applied, abnormal, social and racial, while in (2) he gives us normal human adult psychology; attention; the nervous system; reflex action and instinct; emotions; appetitive and sensory processes; imagination and the sequence of experiences; memory, feeling and thinking. He tells the teacher that he may begin either with Part I or Part II, evidently preferring the topics of Part I first. In this we emphatically agree with him. Teachers of psychology rarely realize that it is uniquely necessary in this field to devote a great deal of time to generating interest, and that severer methods and matter, usually presented too often, not only find little initial interest, but reduce interest to augment it. That there is a slow revolution for the better coming on in this field is evident to all those who have given attention to recent text-books. It seems paradoxical to say that modern psychology is in great need of being humanized, but it is the realization of just this fact that is bringing about these changes.

American College Society Magazine. (1st quarter, price $5 per copy). *Psychology.* By A. A. ROBACK. The American College Society, 1923. 155 p.

This pamphlet is dedicated by Professor Roback to "the members of my little private class in psychology," and gives us a glimpse of the doings of its members after a brief preface by the Editor. The first part discusses practical psychology, what psychology is, gives a hundred questions in psychology answered in the lecture, twenty-five supplementary ones, and then twenty-five miscellaneous practical ones. Then follow samples of elementary experiments, the most influential figures, national contributions, psychological organizations, publications, American psychology, selected bibliography. Part II has brief articles on character analysis and the literature on this subject, mental measurements and questions about it, three schools in psychology, psychology as a subject connected with club work, and college course news. There are full page photographs of the Editor, of William James, and of Josephine Wilson, who does psy-

chological club work among women in California where she is a special lecturer. We are not informed what or where the American College Society is, and it is difficult to understand whether we are dealing with the first number of a magazine of which we are told nothing, or whether it epitomizes the topics treated in a private club or seminary under the direction of the Editor, or whether it is a handbook for the use of his students, and whether he or they wrote most of it. It surely can hardly be, as the preface claims, "a condensed survey of general psychology."

Mental Causes of Accidents. By BOYD FISHER. Boston, Houghton Mifflin Co., 1922, pp. 314.

In successive chapters the author drifts to the unguarded, the puzzled, the muddled, the stubborn, the involuntary, the divided, the troubled, the physical, and the tired, mind. The tenth chapter is on accident hygiene and the last on the self-guided approach to psychology. The author has an excellent comment of the literature upon this subject, and one cannot read the book to a close without the conviction that on the whole a far greater proportion of accidents of all kinds are due, not to imperfect safeguarding on the part of the factories, railroads, and other industrial institutions, but to the state of mind of the individual who suffers.

An excellent feature of the book is a table of types of remedies and how they affect each case.

The last chapter is a good discussion of general text books in psychology, (1) for beginners; (2) for advanced students.

From Augustus to Augustine. By ERNEST G. SIHLER. Cambridge, University Press, 1923. 335 p.

The dozen essays here published, a few of which have appeared elsewhere, but all of which were written since 1916, are of unusual interest, lucidity and competence. The spiritual future of classic civilization, Stoicism and Christianity, under the Antonines, Clement, Tertullian, Neoplatonism, Diocletian, Julian, dusk of the old Gods, Augustine's "The City of God," and perhaps quite as interesting, if not more so than any, the early stages of Augustine constituting an anthology of studies of early Christendom which will interest not only experts, but laymen in these fields. In most of these papers the author has gone to original sources, has been most judicious in his quotations, and each chapter brings out a picture that is admirable in its proportions. We know of no writing in modern times in which the individuality of the great characters here treated, stands out in quite such bold relief.

Elementary Principles of Economics. By RICHARD T. ELY and GEORGE RAY WICKER. 3rd Edition, New York, Macmillan Co., 1923. 532 p.

While the plan of this third edition is unchanged, several chapters have been rewritten, others supplemented, and judicious uses have been made of the abundant illustrations of economic laws during the six years which have elapsed since the previous edition.

Elementary Sociology. By ROSS L. FINNEY. New York, Benj. H. Sanborn & Co., 1923. 234 p.

Beginning with a chapter on human nature, the author stresses heredity and eugenics, acquired traits, the family, unity, industry, standard of living, government education, morals, religion and the social mind. It differs from other handbooks in its attitude toward social problems, in its emphasis upon the moral functions, in the principles on which the

outline is constructed, in the frequent references to fundamental ideas, and the philosophy of life implied in it; and all these, from a pedagogical standpoint, at least, are advantageous. Especially to be commended, is the fact that the author's perspective in the selection of topics is so correct, and that he never loses sight of the moral bearings involved in all sociological problems. The author has made a topic which is too often closely associated with the "dismal science" really interesting.

Negro School Attendance in Delaware. By RICHARD WATSON COOPER and HERMANN COOPER. University of Delaware Press, 1923. 389 p.

This is one of the most elaborate studies in its field, and its publication, with many diagrams and tables, is most impressive. As near as we can make out the most important conclusion is that the four chief causes of absence are illness, agricultural work, parental indifference and other work. There are, of course, other causes. Indeed we are told that "pupils incur absences for almost every conceivable combination of causes," the age at which each cause and all the causes together are most operative; that parental indifference increases with the distance from the school, while illness and labour affect those nearer; that agricultural work is most effective between half and four miles from school and so forth. The work within its rubrics is extremely well done, but it seems to us that both the time and the money might have been spent to better advantage, both for science and for practical service to these coloured children, for there seems to be little of either pedagogic or of psychologic significance about these bare data.

The Deeper Voice. By ANNIE STEGER WINSTON. New York, George H. Doran Co., 1923. 134 p.

The author here expresses with characteristic literary cogency the very earnest conviction that the great need of the world today, is a return to the childlike simplicity of faith in Jesus Christ. Her analysis of child nature shows that it is closer to the great eternal verities, and is more immune from rationalism and intellectualism than that of adults. We have been too much influenced by Paul, and too little by Christ, who points the soul to inner oracles. Faith or intuition can yet do great things if rightly directed.

Plots and Personalities. By EDWIN E. SLOSSON. New York, The Century Co., 1922. 238 p.

The really novel idea in this book of fifteen chapters is the reports upon t he extended use the author has made of his own original plan of selecting items from the personal or agony column of the London "Times", which he read diligently for seventeen years, and having students in many institutions develop longer or shorter stories, of which these items were the spur to the imagination. He also gives the young writer a good deal of general wholesome advice.

The Life and Teaching of Jesus the Christ. By REV. ARTHUR C. HEADLAM. London, John Murray, 1923. 338 p.

The author has spent many years in the study of his theme, and here gives us his results in eight chapters. It is surprising that a churchman should have reached such liberal conclusions, and should make such broad concessions even to Tübingen. So definite views as those expressed here are, of course, based on a very definite decision as to the date of the

Gospels. One of the most interesting chapters is on the crisis which took place in Jesus' mind about the time he sent out his disciples. As to the nature of this crisis, he is not in accord with the latest German and other opinions, which make Jesus to have passed more or less from the Hebrew to the Aryan concept of a dying and rising God. This is just now perhaps the most interesting and crucial point in any treatise upon this subject.

Lectures to Teachers. By RUDOLF STEINER. New York, Anthroposophic Press, 1921. 112 p.

Rudolf Steiner, the creator of the Waldorf School at Stuttgart, now at Dornach, Switzerland, is here called the greatest educational reformer since Pestalozzi. From this little booklet, which is an epitome of his views, we can almost endorse this view, and we wish he could lecture in this country. He makes knowledge of man the basis of the art of teaching, and next to this as a basis comes a knowledge of health and disease. More than half the work is taken up with a characterization of the child from three to seven years of age, from seven to ten, with a special chapter on the tenth year, and then from fourteen on. He agrees with Herbert Spencer, that the actual practice of education at present is hardly less than an anachronism. The morning programme of his school is devoted to intellectual, and the afternoon to eurythmic and industrial training.

The Religious and Social Problems of the Orient. By MASAHARU ANESAKI. New York, Macmillan Co., 1923. 77 p.

The author of this book refutes the wide-spread idea that the east and west cannot understand each other, and from these four lectures perhaps the best lesson for the west is the author's characterization of how western civilization, and especially Christianity, has affected the oriental mind. The scientific attitude is not congenial to it. The east has experienced more than it has experimented, and while its acceptance of the complications of western physical science has been general and hearty, it cannot, at least yet, accept the western view of the moral world. What the east wants is "a force and motive which will both fulfill the demands of activity and co-ordinate with the satisfaction of worshipful contemplation."

The Evolution of the Conscious Faculties. By J. VARENDONCK. New York, The Macmillan Co., 1923. 259 p.

This brilliant Belgian genetic psychologist, author of "The Psychology of Dreams," gives here hardly less than a new system of psychology. Reducing everything to excitation in a process and reaction, and basing all on memory, he defines a thought as the adaptation of revived memories to a practical situation under the influence of affect or will. Wherever there is any sort of memory along with feeling there is a possibility of a mental operation, but we must distinguish reduplicative memory from mere retention. Assuming with Ribot that every idea is a movement that has begun, he almost identifies the most fundamental processes in the human and the animal psyche, and shows that consciousness is a late manifestation of mind.

His chapters are on reduplicative memory, synthetical memory, and perception, conception, unconscious movements and consciousness. There is, on the whole, less concrete material in this book than in his study of dreams, more recognition of psychoanalysis, and the author attempts here nothing less than to give us the basis for a new psychology.

Substance and Function and Einstein's Theory of Relativity. By Ernst Cassirer. Tr. by William Curtis Swabey and Marie Collins Swabey. Chicago, Open Court Publishing Co., 1923. 465 p.

Whatever one may think of Einstein's Theory, there is no doubt that the logical problem has thereby been greatly advanced. The greater portion of this book is taken up with the systematic and historic presentation of the doctrine of relativity in its larger sense. The work is throughout philosophical, and the author insists that the higher thought processes have their own independent basis and validity quite apart from sense elements, whether we trace them inductively or deductively, psychologically or epistemologically. In the last hundred pages or so of the book the author comes to the exposition of Einstein's theory proper, and here his manuscript has been revised by Einstein himself. This is a most noteworthy contribution and brings the abstract mathematical conceptions of relativity clearly into the philosophical and even psychological field better than anything which has yet appeared. The book contains a carefully selected but rather extended bibliography on the whole subject.

A Psychological Retrospect of the Great War. By W. N. Maxwell. New York, Macmillan Co., 1923. 191 p.

In general this author follows McDougall's psychological method, but he is not without sympathy for Watson behaviorism. The shell-shock cases have been the focus of perhaps a disproportionate amount of attention. Without pretending to be an expert in psychology, the greatest value of this interesting book are the copious illustrations of incidents of the war illustrating his main themes, which are the war impulse, danger of instincts and sentiments at the front, courage, the unconscious mind, and the influence of group life on the individual in the army. No one can read this book wihout the conviction that, valuable as have been the psychiatric contributions of the war, they have been by no means exhausted, but, on the other hand, that there is a vast body of psychological phenomena seen in the trenches which is of the utmost scientific significance, but which never comes to the attention of physicians because they are all within the domains of normality. Even those doctors who spent most time in closest contact with soldiers who were invalided by mental upset have much to learn from a book like this.

A Book About Myself. By Theodore Dreiser. New York. Boni & Liveright, 1922. 502 p.

This book is in no sense an autobiography as the title might lead us to suppose. It contains only incidental references to the author's boyhood, and has quite as little to say about his life since he left newspaper work here a score of years ago and became an author with a baker's dozen of books to his credit. One would hardly think that a volume of this size, dealing as it does almost exclusively with the writer's early experiences as a reporter, could be of great interest or importance. This, however, will soon be found, even if one dips anywhere into its nearly eighty chapters, to be a mistake. No work known to us has ever given such a fascinating picture of a reporter's life. During all these years the author was a wanderer, had the most varied experiences in different cities and with different newspapers; and these he tells with a skill and charm which leaves the reader at the end hopeful that he will continue these reminiscences into the years since fame has begun so justly to attend him. It was just these newspaper experiences—which brought him so hard up against life in so many of its aspects and in so many places—that gave him the rich fund of experience and knowledge of human nature which he has later displayed.

Howard Pyle's Book of the American Spirit. Edited by FRANCIS J. DOWD. New York, Harper & Brothers, 1923. 346 p.

This sumptuous quarto volume is a model of elegant book making with one or more illustrations on nearly every page, some of them coloured and many of them occupying a full page. No artist ever devoted himself to depicting typical scenes in American history as did Howard Pyle, and anyone reading this book will have a clearer conception, not only of what America means, but what it has cost in human effort to develop it. The episodes chosen for representation are those that would appeal to an artist, while the text, which is unusually lucid, gives to the plain prosaic facts an almost romantic glamour which the balder narrative of the professional historian lacks. It is a book which ought to be not only in libraries but in homes, and perhaps especially in schools, unless indeed its introduction to the latter would eclipse the dry and prosaic narrative of the texts in history.

The Re-Creating of the Individual. By BEATRICE M. HINKLE. New York, Harcourt Brace & Co., 1923. 464 p.

After a long period of study abroad the author made her name first known to the American public by her able translation of Jung; and she now comes forward after years of successful practice of psychophysics with a volume of her own which easily takes rank with the best things produced in this country in its field. A woman practising psychoanalysis upon both men and women, she has acquired a large basis of experience, has developed original opinions of her own, and has unusual power of lucid statement. The best thing about this book, which everyone interested in the subject ought to read, is that the author takes her standpoint distinctly above the rivalry of the schools of Zurich and Vienna, and draws her material from Jung, whose pupil she chiefly is, and even from Adler, in no way, however, failing to recognize the priority and supremacy of Freud in the whole movement.

After discussing analytic psychology and the development of the individual, she considers the child, the unconscious and its dynamism in human life, dream phantasy and symbolism, the masculine and feminine psychology (one of the most interesting of her chapter), the psychology of the artist, the processes of redintegration of the individual and the significance of psychoanalysis for the spiritual life,—another topic too often neglected or slighted by male writers.

The Birth of Psyche. By CHARLES BAUDOUIN. Tr. by FRED ROTHWELL. New York, E. P. Dutton & Co. 211 p.

This accomplished French poet, dramatist, critic and essayist, who appears here in English translation, not we think with his best production, descants in twenty-four prose cantos upon snow—that is as very young children first experience it; visits (with their parents), evenings and dreams, the terrors of sleep, how stupid people are, sorrow of life, a child's ideas of St. Nicholas, also of the devil, the first experience at school, battles, the anguish of first love and so forth. All are charmingly written but with reminiscences so idealized that there is hardly a vestige of realism anywhere to be found. Indeed the genetic psychologist might easily be misled by the title of the book, which might better have been Silhouettes of Childhood, or Vestiges of Childish Memories.

The Irresistible Movement of Democracy. By JOHN SIMPSON PENMAN. New York, Macmillan Co., 1923. 729 p.

This survey is limited to modern times, taking no account of antiquity or of early movements in Holland or Italy, but tracing the rise of democ-

racy first in America from the beginning down to its final triumph in our Civil War, then in France, and finally in England. It is an interesting and comprehensive survey, and the author, needless to say, is himself a firm believer not only in the merits but in the future of democracy, because he believes in the people. No brief review can do justice to an historic treatise like this, but it must suffice to say that the author has written a book which is quite worthy of comparison with the standard works of Maine, Lecky, and Bryce. He conceives democracy not so much as a spirit or a state of society, as a form of popular government.

Mankind at the Crossroads. By EDWARD M. EAST. New York, Scribner's Sons, 1923. 360 p.

The author revives in a very effective way the spectre of Malthusianism. Within a hundred years the population of the earth will be nearly doubled. By that time all fertile land will be cultivated to near its maximum; no country will be able to export food; and a slight shortage in any staple crop will bring widespread starvation, because fecundity is not reduced as man advances but the fertility of land is constantly diminishing. These are the themes of this bold, important and fascinating book. Like all writers of such subjects, the author is an ardent eugenist, and impugns laws that prevent the teaching of the methods of birth control. We should have been glad if he had told us how to avoid the danger of limiting fecundity in the intelligent classes first, while the lower strata of society breed as before. If eugenics can work the other way and begin by restricting births among the undesirables,—the ignorant, depraved, and disgenic classes,—and encouraging the utmost fertility among the better classes, we might at least avoid a very dangerous transition period. The author rightly condemns the fakers and dilettantes who have entered this field, and pleads for the introduction of biological principles into every domain of politics and statecraft.

Principles of Advertising. By DANIEL STARCH. Chicago, A. W. Shaw Co., 1923. 998 p.

This 1000-page book might be called an encyclopedia upon the subject of advertising. If it does not make all the other books that have lately appeared upon advertising more or less obsolete, it certainly supersedes them all, and one who has read and digested it from cover to cover would not find so very much else in all the rest that stood between him and a complete mastery of the subject.

The history of advertising, its scope, form of the display, media, the different classes of appeal, and above all careful studies of simple cases of effectiveness, e.g. in raisins, paints, and so forth—all are here. The author, too, has sufficient psychological background to commend his conclusions to experts in that field. It is impossible in our space to do justice to the value of so comprehensive and painstaking a work. The book is well gotten up and is well illustrated. If there are not so many reproductions of effective methods as in some previous texts upon the subject, they are far better chosen.

Rejuvenation: How Steinach Makes People Young. By GEORGE F. CORNERS. New York, Thomas Seltzer & Co., 1923. 112 p.

This little book is a masterpiece of both lucidity and condensation. The author is not a physician, but we know of no physician who could have stated the whole subject so effectively and with so few technical terms. He went to Vienna and had various interviews with Steinach himself as well as with his leading disciples, and appends an account of work done in this country. In his list of authorities we miss German titles,

strangely enough, and his Steinach vocabulary perhaps includes too many words in common use. There is a picture of Steinach, and the author sheds interesting light on how this movement affects life insurance, tells us who should be "Steinached," gives epitomes of many cases, reports on operations on women, discounts absurd expectations, says it may be required by law, and that the five years of added efficiency would soon pay the German debt, and so forth.

The Revolt of Youth. By STANLEY HIGH. New York, The Abingdon Press, 1923. 222 p.

This is a remarkable book, and should be read and its contents pondered by every statesman, by every teacher, and by every intelligent citizen interested in the future of civilization. The author surveys the youth movement in Germany, Czecho-Slovakia, Poland, China, and other countries, and a coadjutor extends this survey to Latin America. We miss France, where this movement has a peculiar interest, although a page or two is given to this country in an introductory chapter; we wish, too, that there was more about Great Britain and her dependencies.

Youth has been disenchanted. It fought and won the war against war, was inspired by the highest ideals, and was encouraged by all kinds of promises, the latter forgotten, the former aborted—and youth has had nothing to do with the struggle to make peace. Very striking is the story of the Labor Movement on the Continent, which has impelled thousands of students to work with their hands for self-support, and even in the erection of University buildings in the direction of the Antioch plan and of that at Atlanta. Booker Washington might have been the patron saint of this movement. The students, too, are taking over the management of their own affairs, trying to bring in a new University spirit, and seeking to lend a hand in University government. The style of the book is fascinating.

Aberrations of Life. By JAMES CLARK MCKERROW. New York, Longman's Green & Co., 1923. 107 p.

This little book by the author of "The Appearance of Mind," deals not with normal but with abnormal mental manifestations. It describes physiological abnormalities, and thoughts of attention, knowledge and will, with chapters also on delusions, imagination, diseases of personality, conflicts, dissociations, delusions of greatness, a normal person, psychic phenomena, and so forth. The story of these themes is well told, but the book is far more philosophical than it is psychological.

The Story of the Bible. By HENDRIK VAN LOON. New York, Boni & Liveright, 1923. 452 p.

The author here seems to tell the substance of the Bible in his own graphic way from the days of creation down to the death of Jesus. Perhaps the most striking things in the book are the 168 rough original drawings illustrating the various themes and made by the author himself. It need hardly be said that he regards the Bible throughout as literature and not as dogma or even, in events, history, but as the story of what a very self-conscious and gifted race thought of themselves and their past. There is nothing whatever supernatural even in the origin of the Bible or its contents that we are told, and of course no mention is made of the resurrection. But the author brings to his task the two essential qualifications of a graphic style and a good knowledge of the historic setting of all the incidents. The latter especially makes it interesting to older people. Indeed we are tempted to hazard the prediction that it is not a book that will

fascinate boys, but it will be widely read by adults. All things considered, it seems a bit of affectation and perhaps even an after thought, that the foreword addresses the book to the author's own two boys. If we are not mistaken, however, such a book as this at the present time, when the tendency to condense and simplify history is so strong, will make a strong appeal to the reading public.

Phillistine and Genius. By Boris Sidis. Boston, Richard G. Badger, 1917. 122 p.

In this little book this fecund writer and acute observer of mental aberrations appears at his best, and indeed by implication one can gather a good deal of his general views upon the subject. He brings out in the clearest way both the intelligence and the distinctions between these two types, and in these days of character study it is as fresh, and even more interesting, than when it first appeared.

The Soul of Woman. By Gina Lombroso. New York, E. P. Dutton & Co., 1923. 269 p.

Of all the many books that have appeared since the armistice on the woman question, this seems to us to be on the whole the sanest and most insightful. The cardinal idea which colours the entire volume is that woman, unlike man, who is more egocentric, is alterocentric—that is, that she lives for and in others and cannot be happy unless she loves and is loved. This means a very radical difference between the sexes, which the feminists either ignore or passionately deny. Real progress is not toward equality but toward a differentiation. Women must become more womanly, as well as men more manly. The author in youth, like so many of the most gifted of her sex, was at first an ardent champion of equality, but she has seen a new light, and addresses her book to mothers and young girls in the hope that they will find in it a clue to the very complex problems that now face them.

Woman's intellect is by nature and will always be more intuitive than logical. Being absolutely dependent upon others and their goodwill toward her, she has far greater insight into the characters of those about her than man has, is always sacrificing herself, and finds her greatest happiness in so doing. Her immortality is "plasmic"—that is, she lives in her child who is a prolongation of herself, while man seeks mainly influential immortality.

It is from this point of view that the main topics of the book are developed. Part I, woman's tragic position; Part II, the soul, sentimentality, personality and charm, activity, and so forth; Part III, woman's intellect and culture, moral feeling, love and justice. Perhaps the very best sections of the book are those that describe the highest type of woman, and the nature of love. What might we not expect of her sex now that woman has come into power if the so-called woman's movement were dominated by leaders like this great daughter of the great criminologist instead of by suffragettes and the feminists that are now in control.

On the Firing Line in Education. By A. J. Ladd. Boston, Richard G. Badger, 1921. 264 p.

The title of the first chapter is that of the book. Then follow chapters on the relations of the State University to the High Schools, the University and the teacher, the eye problem, the home, church and school, *noblesse oblige*, local winter sports, the future of the teachers' college and so forth.

Birth Control. What is it? By Lydia Allen DeVilbiss. Boston, Small Maynard & Co., 1923. 186 p.

This book introduced by Dr. Adolph Meyer is an admirable statement of the status and recent history of this important culture movement. After defining birth control, and sketching its progress, purpose, method and the opposition to it, the writer discusses its relations to women, to increase of population, public health, maternal and infant mortality, the mentally defective, and gives a forecast of the future. The author bitterly condemns the federal laws which penalize all attempts to disseminate contra-conception information. The present law of 1873 was directed against obscenity, but it also forbids "every article or thing designed or intended for the prevention of conception" and so forth, and couples these with abortion. Such information cannot even be mailed. The rest is left to the States, and the operation of the law in New York as a sample State is discussed.

This little book is the best, as the latest should be, of its kind, and cannot but convince every candid reader that the welfare of the country and the future of the world demands the revision, not only of the laws, but of public sentiment on this subject.

Das literansche Verständnis der Werktätigen Jugend zwischen 14 und 18. Von Hans Hr. Busse. Leipzig, Johann Ambrosius Barth., 1923. 289 p.

This is an extremely ingenious, painstaking and novel study in psychic evolution and social psychology. The author is a teacher of literature to students mostly from 14 to 18, who come chiefly from working class homes. The method is to outline, and perhaps read in part or in full, some masterpiece from Schiller, Goethe or Shakespeare, and then discuss the characters and situations as developed in the plot, as tests of the intelligence of individual members of the class. Here, as was to be expected, very great differences are revealed, not only in literary sagacity, intelligence and artistic sense, but in understanding language, in the range of vocabularies, and so forth.

Space prevents our doing justice to this masterly and to our thinking rather epoch-making investigation. The author may well be pardoned and even justified in his belief that in this way the teacher can form a far truer estimate of the relative ability of each member of his class than any or all the combined standard tests could supply. He has only a few tables, and relies chiefly not upon the statistical methods, but operates his own method with remarkable pedagogic and scientific insight and sagacity.

Heidede: eine neue Liebe. Von Otto Ernst. Leipzig, L. Staackmann Verlag, 1923. 207 p.

The author is one of the most popular of contemporary romance writers in Germany with a generous list of books to his name. He here describes his adventures with his baby grandchild, whose first invented word used with consistency was "Heidede." He describes various other sounds used with consistency which represent the beginnings of a spontaneously created language, which is very soon displaced by that of the environment. The observations are fresh and original and told with a very unique charm of style which is characterized by the subtlest kind of humour, and evokes in the reader on every page the healthiest kind of irresistible laughter. It is a little book with a few rough illustrations by the author, and it really ought to be put into English, for it is a real contribution to our knowledge of childhood.

The Long Journey: Vol. I. Fire and Ice. 294 p. *Vol. II. The Cimbrians.* 340 p. By JOHANNES V. JENSEN. Tr. by A. G. Chater. New York, Alfred Knopf, 1923.

The long journey is long indeed, for it is the story of prehistoric man from the time when he began to assert himself as the latter, and of creation down to the earliest authentic records. It is, however, nearer to the conception of Stanley Waterloo than it is to Van Loon's "Story of Mankind." The author's imagination sweeps him and his reader along almost as if the former were a reincarnation of the old Eddas, if they had any. He has no difficulty in making primitive man contemporary with the glacial age and even before it. The weaklings went south and degenerated, the stalwarts defied not only ice but volcanic and other fires, and were first of all a family horde, the head of which was extremely wise and held and exercised ruthlessly the power of life and death over not only the females, but the males of his group. And so the story goes on until one forgets the liberties the writer takes with the scanty knowledge we have of these early races, and can almost hope that he, and not the scientists, is right. If so, primitive man was a tremendously energetic, creative, and altogether terrible creature, and leaders of our day compared to those of this early age seem almost pigmoid.

The style of this modern Viking, too, is both compelling and unique. Every lover of romance and everyone interested in history will welcome such a book. To us it seems to mark the avatar of a new genius in the literary world of the north.

The Making of the Western Mind. By F. MELIAN STAWELL and F. S. MARVIN. New York, George H. Doran & Co., 1923. 353 p.

This volume, the title of which may have been suggested by Robinson's "Mind in the Making," is divided as follows: Part I, ancient, is devoted to Hellenism and Christianity; Part II, medieval, to the dark ages, Mohammedanism, Constantine, the new poetry, self-government, the new architecture, new life in Italy, Dante, troubadours, the hundred years' war, and Italian cities; Part III, Renaissance, the Italian art, the genius of Germany, Spain, the Dutch Republic, the Renaissance in France and England, science; Part IV, the triumphs of mathematics, philosophy, criticism, Rousseau and reform, music, culture, the French revolution, romantic revival, and so forth.

The book is thus a treatise on history, made up of selections of salient features thought to have contributed to the composition of the mentality of our day. Movements and ages which make such contributions are the significant ones, and others may well be neglected. This work, therefore, is the product of the new postbellum attitude toward the past, and quite apart from its intrinsic value, which is great, it is one of the most significant expressions of the Zeitgeist which is everywhere looking for essentials and seeking to forget non-essentials.

The Control of the Social Mind. By ARLAND D. WEEKS. New York, D. Appleton & Co., 1923. 263 p.

This psychology of economic and political relations is a very sane and timely presentation of a most important subject. Part I, on fundamentals and their applications deals with control through psychology, the social mind, the response to the environment, habit in ideas, the psychology of defense, the basis of co-operation, the psychology of public business. Part II, relating to the social mind at closer range, deals with instinctive tendencies as affecting social control, with expansion of motivations, the creative aspect of play, social uses of memory, the art of accuracy, the

power of suggestion, attitude toward the social order, the available civic energy.

Source Book in the Philosophy of Education. By WILLIAM HEARD KILPATRICK. New York, The Macmillan Co., 1923. 365 p.

This book will be irresistibly compared with the Robinson's "Readings in General Psychology," noticed in the last number of this Journal, as we have compared it, in every point to the great advantage of the latter, which is far better adapted to the needs of actual teachers. The selections in the former, although more numerous, are made from too abstract a point of view, and may be even called doctrinaire and lacking in discrimination and in impartiality.

Personnel, Management, Principles, Practices, and Point of View. By WALTER DILL SCOTT and ROBERT C. CLOTHIER. Chicago, A. W. Shaw & Co., 1923. 643 p.

These authors are more competent than any others in this country, or probably in the world, to report on the whole subject of the uses of psychology for business, for they have done pioneer work, and here have very happily summarized the best of their previous publications upon the many aspects of dealing with fitting a man to his job, stimulating him to utilize his maximal capacity, rating and testing his efficiency, dealing with labor turn-over and other problems, and so forth. The many tables and charts and methods described are so typical and comprehensive that they give this volume something of an encyclopedic character. The book strives to "crystallize modern thought on the subject of human adjustments in the industry, both as an expression of what has been achieved so far, and as a basis for further growth."

From Immigrant to Inventor. By MICHAEL PUPIN. New York, Charles Scribner's Sons, 1923. 396 p.

This book is in most respects the most fascinating autobiography the writer has ever read. It has an intense human interest throughout and should be read as a counterfoil to Robinson's "Rehumanization of Science." The author is a physicist who has won both fame and wealth by his work, but he is an intense humanist through it all. His Serbian peasant mother, who never learned to read or write, seems to have been his muse, who followed as well as she could all his career and sympathized as far as she could understand with all his scientific ideals which she did seem to comprehend in a vague way. He often revisited this remarkable woman, and she saved him from any strain of the *éclaircissement* involved in passing from a severe Catholicism to the attitude of an accomplished scientist.

The author first landed on these shores at the age of fifteen with only five cents, did various kinds of hard manual labor, qualifying himself to enter college when he was working in a cracker factory; and the rest of his eminent career, which the scientific world before knew in a general way, is here most graphically told. The author, although a great scientist, has evidently no theological tenets, but his very nature is essentially religious, sentimental in the best sense, and even poetic.

The "Genius." By THEODORE DREISER. New York, Boni & Liveright, New Edition, 1923. 736 p.

This book, with its painfully fine print and its 736 pages which only covers the years of his reporterial life before the author abandoned exclusive devotion to newspaper work and set up as an author, is realistic with a vengeance. There is hardly a trace of idealism, and a critic might

be tempted to add, of conventional morality in the whole book, but it is a plain and often very interesting, but often very tediously detailed, account of a hunter of news connected with one paper after another, and wandering from one city to another. Just why it is entitled "The Genius," if it is an autobiography, it is difficult to say. Perhaps it contributes most to our better knowledge not of its hero but of newspaper work, spirit and methods. The book has but recently emerged from some years of condemnation by the Society for the Prevention of Vice.

Europe Since 1918. By HERBERT ADAMS GIBBONS. New York, The Century Co., 1923. 622 p.

This author, with a new map of Europe, of Asia, and Africa, here gives us a general view of world politics in thirty chapters, which shows an intimate acquaintance with world conditions very rare amongst scholars in this country. He attempts to be absolutely impartial, and confines himself mainly to facts as he sees them. He insists that he is neither optimist nor pessimist, and has given us here a book which is invaluable for the student of present-day history. The only disappointment anyone can feel with the book is in the last chapter entitled, "The Next Moves in the International Game," for it is a little uncertain at the end what the author believes these moves really are. He pleads especially for the rights of small nations against larger ones, which he thinks have been disregarded, but beyond the hope that these will be more fully recognized, he does not attempt to rise on the wings of prophecy. At the same time, he has given us a book here which no statesman can afford not to read and ponder.

The Will-Temperament and its Testing. By JUNE E. DOWNEY. Yonkers-on-Hudson, N. Y., World Book Co., 1923. 339 p.

Professor Downey here summarizes the work of years, on which she may well be congratulated, for she has taken a new and most promising step in attempting to test, not intelligence save incidentally, but will power. There may well be differences of opinion as to her methods, and she may not be entirely exempt from the fallacy of nearly all the testers of believing that they can really estimate not only ability but the future success in life. As she well remarks, it will take many years for us to find from the careers of students whether these tests will do all that is claimed for them; but her work is so significant and hopeful that it merits a far more detailed appreciation than we have space for here.

Backbone: The Development of Character. By SAMUEL S. DRURY. New York, Macmillan, 1923. 216 p.

The author has for many years been the Headmaster of one of our leading preparatory schools, and he here prints a score of his very effective talks to his boys. They are all direct, personal, concrete, full of illustrations from school and boy life as well as from literature. It is an excellent book to place in the hands of a boy in the middle teens.

Complete Outfit of Test Material, consisting of a specimen of each Test listed with the price in the Catalogue of Standard Tests. Yonkers-on-Hudson, The World Book Co.: 1923.

This appears to be the best set of its kind now available, and should be in the hands of everyone interested in testing.